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William B. Lord

William B. Lewis



State Park Exhibit, 1907.

ANNUAL REPORT

OF THE

Wisconsin State Horticultural
Society

FOR THE YEAR 1908

VOLUME XXXVIII

F. CRANEFIELD, *Secretary*
MADISON, WIS.



MADISON, WIS.

DEMOCRAT PRINTING COMPANY, STATE PRINTER
1908

LETTER OF TRANSMITTAL.

MADISON, WIS., March 1, 1908.

To His Excellency, JAMES O. DAVIDSON,
Governor of Wisconsin,

DEAR SIR:—I have the honor to transmit to you herewith the Thirty-eighth Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,
Secretary.

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CONSTITUTION AND BY-LAWS.

CONSTITUTION.

Article I. This society shall be known as the Wisconsin State Horticultural Society.

Article II. Its object shall be the advancement of the art and science of horticulture throughout the state.

Article III. Its members shall consist of annual members paying an annual fee of fifty cents excepting that paid members of local societies may become members on payment of an annual fee of twenty-five cents, of life members paying a fee of five dollars. Wives of such members shall be entitled to the privileges of full membership; of honorary annual members who may by vote be invited to participate in the proceedings of the society and honorary life members who shall be distinguished for merit in horticulture and kindred sciences or who shall confer any particular benefit upon the society.

Article IV. Its officers shall consist of a President, Vice-President, Secretary, Treasurer, and an Executive Committee, consisting of the foregoing officers and additional members, one from each congressional district of the state, five of whom shall constitute a quorum at any of its meetings. All above officers, except Secretary, shall be elected by ballot, and shall hold office for one year thereafter, and until their successors are elected. The Secretary shall be appointed by the Executive Committee at the annual meeting, after the election of officers, and shall hold office for one year thereafter, or until his successor is appointed.

Article V. The members of the Executive Committee from the several congressional districts shall be chosen by the delegates of their respective county or local societies present at the annual meeting of this society, or in case of the absence of delegates from such societies or in case of failure to elect, such members shall be chosen from among the members of this society present from such districts. But if any district is not represented the vacancy shall be filled by vote of the members of this society present at the annual meeting.

Article VI. The term "County and local horticultural societies" shall include any organization that shall have for its sole object the advancement of the interests of its members in the growing or sale of horticultural crops; provided, that such society acts by authority of a regularly adopted constitution and makes an annual report to the Secretary of the state society.

Article VII. The society shall hold its annual meeting for the election of officers, exhibition of fruits and discussions, in Madison, and such other meetings and at such time and place as the Executive Committee may direct.

Article VIII. The President, Treasurer, and Secretary shall constitute a Board of Managers which may conduct any business deemed necessary for the society in the absence of the Executive Committee. All bills against the society must be audited by the Board of Managers before being paid.

Article IX. This constitution, with the accompanying by-laws, may be amended at any regular meeting by a two-thirds vote of the members present.

BY-LAWS.

I. The President shall preside at meetings, and, with the advice of the Secretary, call all meetings of the society, and have general supervision of the affairs of the society, and shall deliver an annual address upon some subject connected with horticulture.

II. The Vice-President shall act in the absence or disability of the President, and perform the duties of the chief officer.

III. The Secretary shall attend to all the correspondence, shall record the proceedings of the society, preserve all papers belonging to the same, and superintend the publication of its reports. He shall also present a detailed report of the affairs of the society at its annual meeting. He shall also endeavor to secure reports from the various committees, and from local societies of the condition and progress of horticulture in the various districts of the state, and report the same to the society. He shall also be Superintendent of all Trial Orchards. It shall be the duty of the Secretary to make a report to the governor of the state on the transactions of the society, according to the provisions of the statutes or state reports.

IV. The Superintendent of Trial Orchards shall supervise the planting and cultivation of the trial orchards and trial stations and shall exercise general control of the same, subject to the directions of the Trial Orchard Committee.

V. The Treasurer shall keep an account of all moneys belonging to the society and disburse the same on the written order of the President, countersigned by the Secretary, and shall make an annual report of the receipts and disbursements, and furnish the Secretary with a copy of the same on or before the first day of the annual meeting. The Treasurer elect shall, before entering upon the discharge of the duties of his office, give good and sufficient bonds for the faithful performance of his duties subject to the approval of the Executive Committee.

VI. The Executive Committee may manage all the affairs of the society and fill all vacancies in the board of officers; meetings of the committee may be called by the President, the Secretary or by the Secretary on written request of five members.

VII. Regular meetings of the Board of Managers shall be held bi-monthly to audit accounts and transact other business; special meetings may be called by any member of the Board.

VIII. The standing committees of this society shall be as follows:

1st. Committee on Finance, consisting of three members.

2d. Committee on Nomenclature and New Fruits, consisting of three members.

3d. Committee on Trial Orchards and Trial Stations, consisting of three members, and such other committees as may be determined from time to time to be necessary. Said committees to be appointed annually by the President.

IX. It shall be the duty of the Finance Committee to settle with the Treasurer and to examine and report upon all bills or claims against the society which may have been presented and referred to them.

X. The Trial Orchard Committee shall have general control of the locating, planting and care of all trial orchards or trial stations, and shall visit collectively each orchard or station once each year or oftener if deemed necessary. Meetings of the committee may be called at any time by the President of the society or by the Superintendent of Trial Orchards.

LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN.

The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard Committee. Hardiness of Plant and fruit bud has been the leading thought in the selection of varieties.

APPLES (General List).

Alexander, Astrachan (Red), Autumn Strawberry, Dudley,
Fall Orange, Fameuse (Snow), Golden Russet, Hibernal,
Lowland Raspberry, Longfield, Lubsk Queen, McIntosh,
Malinda, McMahan, Newell, Northwestern Greening, Ol-
denburg (Duchess), Patten Greening, Perry Russet, Plumb
Cider, Scott, Tetofski, Talman (Sweet), Utter, Wealthy,
Westfield (Seek-no-Further), Windsor, Wolf River, Yellow
Transparent.

APPLES (Lake Shore List).

In addition to the above many other varieties including the following may be successfully grown in the extreme southern part of the state and in the counties bordering on Lake Michigan. Baldwin, Eureka, Fallawater, Gano, King, Northern Spy, Pe-
waukee, Willow Twig, York Imperial, Bellflower.

APPLES (Commercial Orchard List).

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested: Dudley, Fameuse, Longfield, McMahan, McIntosh, Northwestern Greening, Ol-
denburg, Scott, Utter, Wealthy, Yellow Transparent.

APPLES (Five Varieties for Farm Orchard).

Northwestern Greening, Oldenburg (Duchess), Talman (Sweet), Wealthy, Yellow Transparent.

APPLES (For Trial)

These are all promising varieties but have not been extensively grown in any part of the state. **Gem City, Hanko, Lily, Wendorff, Zettle Bellflower.**

CRABS.

Brier Sweet, Hyslop, Lyman, Martha, Sweet Russett, Transcendent, Whitney.

PLUMS.

Of the classes commonly cultivated, viz.: **European, Japanese and Native or American**, the last named is the most reliable.

NATIVE PLUMS.

De Soto, Forest Garden, Hammer, Hawkeye, Ocheeda, Quaker, Rockford, Surprise, Wyant.

EUROPEAN PLUMS.

(Not recommended except along Lake Shore). **Lombard, Green Gage, Moore's Arctic.**

JAPANESE PLUMS.

(Not recommended except along Lake Shore). **Abundance, Burbank.**

CHERRIES.

Early Richmond, Montmorency.

GRAPES.

Brighton, Campbell's Early, Concord, Delaware, Diamond, Green Mountain, Moore's Early, Niagara, Worden.

BLACKBERRIES.

Briton (Ancient), Eldorado, Snyder.

STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted alone.

Bederwood, *Crescent, Clyde, -Dunlap, Enhance, Gandy,
Glen Mary, *Haverland, Lovett, *Sample, Splendid, *War-
field.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: Conrath, Cumberland, Gregg, Older.

Red: Cuthbert, Loudon, Marlboro.

Purple: Columbian.

CURRANTS.

Red: Red Cross, Red Dutch, Long Bunch Holland, Victoria.

White: White Grape.

Black: Lee's Prolific, Naples.

GOOSEBERRIES.

Downing.

PEARS.

On account of the prevalence of blight and winter killing, pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the southeastern part of the state. The following list includes both early and late varieties. List prepared by W. J. Moyle.

Bartlett, Clapp Favorite, Early Bergamont, Flemish Beauty,
Idaho, Kieffer, Lawson, Seckel, Sheldan, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED.

EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae, Red Cedar.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, Red Cedar, White Spruce, Colorado Blue Spruce.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of five is indicated by double stars.

**American Elm, Box Elder, Black Cherry, Carolina Poplar, **Green Ash, *Hackberry, Honey Locust, Larch, **Linden, **Norway Maple, *Scarlet Maple, **Silver Maple, *Sugar Maple, Scarlet Oak, *White Oak, White Ash.

DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

LIST OF SHRUBS RECOMMENDED.*

Scientific Name.	Common Name.
Berberis vulgaris	Common Barberry
Berberis vulgaris var. atropurpurea.....	Purple-leaved Barberry

* From Bulletin 108, Wisconsin Experiment Station, by F. Cranefield.
Berberis Thunbergii Thunberg's Barberry

<i>Corylus maxima</i> var. <i>purpurea</i>	Purple Filbert
<i>Diervilla florida</i>	Weigela (rose)
<i>Diervilla candida</i>	Weigela (white)
<i>Diervilla hybrida</i>	Weigla (Eva Rathke)
<i>Diervilla hybrida</i> var. <i>Desboisii</i>	Desbois Weigela
<i>Eleagnus argentea</i>	Silver Berry
<i>Euonymus Europaeus</i>	Strawberry Tree
<i>Hibiscus Syriacus</i>	Althea
<i>Hippophae rhamnoides</i>	Sea Buckthorn
<i>Hydrangea paniculata</i> gr.	Garden Hydrangea
<i>Lonicera Ruprechtiana</i>	Ruprecht's Honeysuckle
<i>Lonicera Tartarica</i>	Tartarian Honeysuckle
<i>Morus Alba</i> var.	Tea's Weeping Mulberry
<i>Philadelphus coronarius</i>	Mock Orange
<i>Philadelphus coronarius</i> var. <i>aurea</i>	Golden Mock Orange
<i>Philadelphus inodorus</i>	Mock Orange, large fl.
<i>Potentilla fruticosa</i>	Shrubby Clinque Foil
<i>Prunus nana</i>	Russian Almond
<i>Rhodotypos kerrioides</i>	Rhodotypos
<i>Rhus Cotinus</i>	Smoke Bush
<i>Ribes aureum</i>	Missouri Flowering Currant
<i>Robinia hispida</i>	Rose Acacia
<i>Rosa rugosa</i>	Japanese Rose
<i>Sambucus nigra</i> var. <i>aurea</i>	Golden Elder
<i>Shepherdia argentea</i>	Buffalo Berry
<i>Spiraea Bumalda</i>	Bumalda Spiraea
<i>Spiraea Bumalda</i> var.	Anthony Waterer Spiraea
<i>Spiraea Billardii</i>	Billard's Spiraea
<i>Spiraea Douglassii</i>	Douglas' Spiraea
<i>Spiraea Japonica</i>	Japanese Spiraea
<i>Spiraea salicifolia</i>	Meadow Sweet Spiraea
<i>Spiraea Van Houtte</i>	Van Houten's Spiraea
<i>Syringa Persica</i>	Persian Lilac
<i>Syringa villosa</i>	Chinese Lilac
<i>Syringa vulgaris</i>	Common Lilac
<i>Tamarix Pallassii</i> Desv. (<i>Tamarix Amurensis</i> Hort.)	Amur. Tamarix
<i>Viburnum Opulus</i> vr. <i>sterile</i>	Snowball

ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier.
 Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing,
 Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Coquettes des

Blanches, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russel's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler.

Five hybrid perpetual roses for the garden: Gen. Jacqueminot, Magna Charta, Margaret Dixon, Mrs. John Laing, Paul Neyron.

COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS.

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative heights will be maintained. The following may serve as a partial guide in planting:

Tall—10 to 15 Feet.

Barberry (Common)

Lilac, Common

Barberry (Purple-leaved)

Lilac, Japanese

Golden Elder

Lilac Jossika's

Honeysuckle, Fly

Mock Orange

Honeysuckle, Slender

Sea Buckthorn

Honeysuckle, Tartarian

Siberian pea tree (tall)

Honeysuckle, Tartarian white

Medium—6 to 10 Feet.

Crandall Currant

Silver Berry

Honeysuckle, Blue

Strawberry Tree

Japanese Rose

Spiraea, Billiards

Lilac, Chinese

Spiraea, Douglas

Purple Filbert
 Spiraea, Three-lobed
 Rose Acacia
 Spiraea, Van Houten's
 Russian Almond
 Weeping Mulberry
 Siberian Pea tree (dwarf)
 Wiegelas

Dwarf—2 to 6 Feet.

Althea
 Spiraea, Anthony Waterer
 Barberry, Thunberg's
 Spiraea, Ash-leaved (Sorbaria)
 Cinque Foil
 Spiraea, Bumalda
 Honeysuckle, Albert's
 Spiraea, Japanese
 Hydrangea
 Spiraea, Meadow Sweet
 Rhodotypos
 Spiraea, Plum-leaved

A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON
 HOME GROUNDS.

Scientific Name.	Common Name.
<i>Arctostaphylos Uva-ursi</i>	Bearberry
<i>Ceanothus Americanus</i>	New Jersey Tea
<i>Cephalanthus occidentalis</i>	Button Bush
<i>Cimaphila umbellata</i>	Prince's Pine
<i>Comptonia aspleniflora</i>	Round-leaved Dogwood
<i>Cornus stolinifera</i>	Red Osier Dogwood
<i>Dirca palustris</i>	Leatherwood (Wickopy)
<i>Epigaea repens</i>	Trailing Arbutus
<i>Euonymus atropurpureus</i>	Wahoo
<i>Hypericum pyramidatum</i>	St. John's Wort
<i>Ilex verticillata</i>	Winterberry (Holly)
<i>Juniperus procumbens</i>	Trailing Juniper
<i>Myrica Gale</i>	Sweet Gale
<i>Physocarpus opulifolia</i>	Ninebark
<i>Rhamnus catharticus</i>	Buckthorn
<i>Rhus Typhina</i>	Staghorn Sumac

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<i>Rhus Glabra</i>	Smooth Sumac
<i>Rhus copallina</i>	Dwarf Sumac
<i>Ribes rubrum</i>	Wild Rose Currant
<i>Ribes floridum</i>	Wild Black Currant
<i>Rosa lucida</i>	Wild Rose (tall)
<i>Rosa blanda</i>	Wild Rose (dwarf)
<i>Rubus odoratus</i>	Purple-flowered Raspberry
<i>Rubus Nutkanus</i>	White-flowered Raspberry
<i>Sambucus Canadensis</i>	Common Elder
<i>Sambucus pubens</i>	Scarlet Elder
<i>Shepherdia Canadensis</i>	Shepherdia
<i>Symporicarpus racemosus</i>	Snowberry
<i>Symporicarpus vulgaris</i>	Coral Berry
<i>Taxus baccata</i>	Ground Hemlock
<i>Viburnum lentago</i>	Sheepberry
<i>Viburnum dentatum</i>	Black Haw
<i>Viburnum acerifolium</i>	_____
<i>Viburnum opulus</i>	Bush Cranberry
<i>Zanthoxylum Americanum</i>	Prickly Ash

SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State.

Common Lilac, Tartarian Honeysuckle, *Rosa Rugosa*, Mock Orange or *Syringa*, Van Houten's *Spiraea*, Common Barberry.

THREE PERENNIAL VINES.

Ampelopsis or American Ivy, (native in Southern Wisconsin). Wild Grape, Trumpet Honeysuckle.

BLACK LIST.

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED ON
THE GROUNDS OF THE EXPERIMENT STATION AT MADIS-
ON AND FOUND UNSATISFACTORY.

Scientific Name.	Common Name.
<i>Azalea arborescens</i> .	Rhododendron
<i>Azalea viscosa</i> .	Rhododendron
<i>Azalea nudiflora</i> .	Azalea
<i>Azalea mollis</i> .	Azalea
<i>Calycanthus floridus</i> .	Sweet-scented shrub
<i>Caryopteris Mastacanthus</i> .	Blue Spiraea
<i>Chionanthus Virginica</i> .	White Fringe
<i>Clethra alnifolia</i> .	Sweet Pepperbush
<i>Colutea arborescens</i> .	Bladder Senna
<i>Cornus florida</i> .	Flowering Dogwood
<i>Cydonia Japonica</i> .	Japanese Quince
<i>Daphne Cneorum</i> .	Daphne
<i>Daphne Mezereum</i> .	Daphne
<i>Deutzia gracilis</i> .	Slender Deutzia
<i>Eleagnus longipes</i> .	Goumi
<i>Exochorda grandiflora</i> .	Pearl Bush
<i>Forsythia suspensa</i> .	Golden Bell
<i>Halesia tetraptera</i> .	Snowdrop tree
<i>Itea Virginica</i> .	Virginia Willow
<i>Kerria Japonica</i> .	Kerria
<i>Ligustrum vulgare</i> .	Common privet
<i>Paulownia imperialis</i> .	Paulownia
<i>Prunus cerasifera</i> var. (<i>Prunus pissardi</i> Hort).	Purple-leaved Plum
<i>Prunus Japonica</i> .	Flowering Almond
<i>Prunus triloba</i> .	Flowering plum (double)
<i>Spiraea Arguta</i> .	Arguta Spiraea
<i>Spiraea Thunbergii</i> .	Thunberg's Spiraea

The plants of certain of the above named varieties made a good growth each year but have not blossomed unless given thorough winter

protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but has not borne flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered Plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list have either died outright or else barely survived.

OFFICERS AND COMMITTEES FOR 1908.

President, R. J. Coe.....	Ft. Atkinson
Vice-President, D. E. Bingham.....	Sturgeon Bay
Treasurer, L. G. Kellogg.....	Ripon
Secretary, F. Cranefield.....	Madison

EXECUTIVE COMM TTEE.

R. J. Coe, Chairman.....	Ex-Officio
D. E. Bingham.....	Ex-Officio
L. G. Kellogg.....	Ex-Officio
F. Cranefield.....	Ex-Officio
1st Dist., A. J. Smith.....	Lake Geneva
2nd Dist., Prof. E. P. Sandsten.....	Madison
3rd Dist., Wm. Toole.....	Baraboo
4th Dist., C. L. Meller.....	Milwaukee
5th Dist., H. C. Melcher.....	Oconomowoc
6th Dist., L. A. Carpenter.....	Fond du Lac
7th Dist., A. J. Philips.....	West Salem
8th Dis., M. E. Henry.....	Oshkosh
9th Dist., W. S. Hager.....	Depere
10th Dist., Irving Smith.....	Ashland
11th Dist., C. L. Richardson.....	Chippewa Falls

FINANCE COMMITTEE.

T. E. Loope, Chairman.....	Eureka
Wm. Longland.....	Lake Geneva
C. L. Pearson	Baraboo

COMMITTEE ON TRIAL ORCHARDS.

L. G. Kellogg, term expires.....	Feb., 1911
D. E. Bingham, term expires.....	Feb., 1910
R. J. Coe., term expires.....	Feb., 1909

COMMITTEE ON CO-OPERATIVE FRUIT MARKETING.

W. H. Hanchett, D. E. Bingham, C. L. Pearson.

LOCATION OF TRIAL ORCHARDS.

Wausau, Marathon county, 10 acres.....	Established 1897
Medford, Taylor county, 3 acres.....	Established 1903
Poplar, Douglas county, 10 acres.....	Established 1904
Maple, Douglas county, 3 acres.....	Established 1906
Barron, Barron county, 5 acres.....	Established 1906
Manitowoc, Manitowoc county, 5 acres.....	Established 1907
Gays Mills, Crawford county, 5 acres.....	Established 1907
Sturgeon Bay, Door county, 5 acres.....	Established 1908
Sparta, Monroe county, 1 acre (Grape Station).....	Established 1908

MEMBERS OF THE WISCONSIN STATE HORTICULTURAL SOCIETY.

LIFE MEMBERS.

	County
Allis, Frank W.	Dane
Ames, W. L.	Dane
Ayer, Ed. E.	Walworth
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Barnes, A. D.	Waupaca
Barnett Bros.	Chicago, Ill.
Brown, F. G.	Dane
Buckstaff, D. C.	Winnebago
Buehler, J. G.	Richland
Bussey, W. P.	Winnebago
Carpenter, L. A.	Fond du Lac
Carver, N. E.	Bayfield
Cashman, Thos. E.	Minnesota
Chandler, S. S., Jr.	Waupaca
Chapple, F. H.	Dane
Coe, R. J.	Jefferson
Cole, W. B.	Kenosha
Converse, D. C.	Jefferson
Dunn Co. School of Agr. & Domestic Economy	Menomonie
Eaton, B. A.	Milwaukee
Edwards, F. C.	Jefferson
Fancher, W. E.	Racine
Fieldhouse, Wm.	Iowa
Fiebing, J. H.	Milwaukee
Foley, M. F.	Sauk
France, N. E.	Grant
Freeman, G. A.	Monroe
Freeman, Roy F.	Racine
Guilford, W. S.	Illinois
Hager, W. S.	Brown
Hanchett, W. H.	Monroe
Harris, N. W.	Walworth

Harland, F. W.	Milwaukee
Harden, F. A.	Waupaca
Herbst, J. L.	Monroe
Hudnall, George B.	Douglas
Hutchinson, C. L.	Walworth
Johnson, Chas.	Waupaca
Johnson, Franklin	Sauk
Jones, John D.	Grant
Jones, G. D.	Marathon
Joys, A. M.	Milwaukee
Kierstead, E. H.	Dane
Kellogg, M. S.	Rock
Kellogg, Geo. J.	Jefferson
Kellogg, L. G.	Green Lake
Knight, Wm.	Bayfield
Koehler, John	Milwaukee
Kremers, Prof. E.	Dane
Kreutzer, A. L.	Marathon
Krienetz, Alfred J.	Milwaukee
La Follette, Hon. Robt. M.	Dane
Lathrop, Rev. Stanley E.	Ashland
Loope, Dr. T. E.	Winnebago
Loop, A. I.	Pennsylvania
Malde, O. G.	Wood
Manitowoc Seed Co.	Manitowoc
Marshall, S. H.	Albemarle Co., Va.
McGregor, E. L.	Outagamie
Naffz, Henry E.	Sauk
Oleson, Janes P.	Green Lake
Orr, E. D.	Grant
Palmer, L. H.	Sauk
Peck, Chas. J.	Sheboygan
Plumb, W. H.	Dane
Pollworth, C. C.	Milwaukee
Raymer, Geo.	Dane
Rentschler, F.	Dane
Richardson, E. A.	Monroe
Riordan, D. E.	Ashland
Rounds, Wm.	Sauk
Rosenow, H. E.	Waukesha
Ruste, G. O.	Dane
Ryerson, M. A.	Walworth
Salter, Walter N.	Taylor
Saxe, Arthur	Walworth

xxvi WISCONSIN STATE HORTICULTURAL SOCIETY.

Schuette, Aug.	Manitowoc
Simon, H.	Sauk
Simonson, Arthur	Racine
Seubert, John	Minnesota
Smith, Irving	Ashland
Smith, Geo. B.	Brown
Smith, Silas S.	Forest
Steele, W. H.	Waukesha
Taylor, Will L.	Grant
Tiff, Geo. L.	Milwaukee
Tilison, Mrs. Ida E.	La Crosse
Tittemore, J. N.	Winnebago
Toole, Wm.	Sauk
Toole, W. A.	Sauk
Treleven, Jos. D.	Winnebago
Underwood, J. M.	Minnesota
Underwood, Roy	Minnesota
Vaughn, B.	Wood
Van Dyke, Geo. D.	Milwaukee
Webb, W. H.	Douglas
Williams, Norman G.	Outagamie
Williams, Daniel	Waukesha
Wright, Arthur	Milwaukee

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F. W. Case	Chicago, Ill.
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C. G. Patten	Charles City, Iowa
Jonathan Periam	Chicago, Ill.
F. H. Phoenix	Delavan, Wis.
A. J. Philips	West Salem, Wis.
Prof. Wm. Trelease	St. Louis, Mo.

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W. D. Boynton	Shiocton, Wis.
Charles Hey	Dixon, Ill.

W. M. Kollock.....	Hood River, Oregon
Prof. L. R. Taft.....	Agricultural College, Mich.
Wm. A. Taylor.....	Washington, D. C.
J. R. Kirk.....	Mason City, Iowa

ANNUAL MEMBERS.

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Ahlers, Walter	Ozaukee
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Anderson, Fred.....	Racine
Askett, W. H.	Monroe
Aznoe, John	Door
Baensch, Emil	Manitowoc
Babcock, F. E.	Monroe
Babcock, Dr. S. M.....	Dane
Baker, H. J.....	Fond du Lac
Baldwin, Herbert	Oconto
Barringer, W. E.....	Sauk
Barden, W. F.....	Milwaukee
Bardenwerper, C. H.....	Milwaukee
Barnes, Geo. F.....	Milwaukee
Bartlett, C. M.....	Barron
Bathrick, D. D.....	Illinois
Beach, Prof. S. A.....	Iowa
Bedell, E. S.	Manitowoc
Bennett, A. E.	Wood
Bennett, A. C.	Wood
Bennett, W. F.....	Illinois
Benjamín, R. F.	Waukesha
Beerend, Dr. C.....	Milwaukee
Bentley & Kelley	Sauk
Bethke, Ed.	Milwaukee
Bigelow, Ray	Ashland
Bingham, D. E.	Door
Bisbee, John	Minnesota
Bjaadall, K. O.....	Dane
Blackman, Henry B.....	Richland

xxviii WISCONSIN STATE HORTICULTURAL SOCIETY.

Black, Harry	Jefferson
Bodenstein, F.	Dane
Bonns, W. W.	New York
Book, J. A.	Manitowoc
Bowman, Dr. F. F.	Dane
Boyles, C. L.	Walworth
Bradt, H. H. G.	Winnebago
Brandenburg, O. D.	Dane
Brainard, C. P.	Grant
Bresnahan, P. G.	Waushara
Brewer, F. E.	Sauk
Bridge, F. A.	Dane
Bridge, H. A.	Outagamie
Briggs, Newton	Dane
Briggs, E. G.	Crawford
Brigham, Chas. I.	Dane
Brinker, Chas.	Missouri
Brown, Preston W.	Dane
Brown, C. L.	Milwaukee
Brown, S. L.	Crawford
Brown, A. D.	Douglas
Brown, A. D.	Sauk
Brown, F. M.	Dane
Bumbalek, John I.	Milwaukee
Buntrack, Theo. H.	Waupaca
Burdick, C. J.	Langlade
Burroughs, Geo.	Dane
Burton, Warren	Walworth
Burgess, Ira R.	Kenosha
Button, A. A.	Milwaukee
Button, Geo.	Waupaca
Cantwell, F. W.	Dane
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Carey, C. H.	Michigan
Carey, J. E. L.	Waushara
Carley, S. A.	Green Lake
Carpenter, Mary	Dane
Children, A. G.	Milwaukee
Cheek, A. P.	Sauk
Christiansen, Prof. F.	Manitowoc
Christiansen, H. E.	Polk
Christiansen, A. H.	Winnebago
Christiansen, H. C.	Winnebago
Church, Geo. S.	Winnebago

Clark, M. E.	Dane
Cleermans, Aug.	Brown
Cochrane, Mrs. J. W.	Dane
Cole, Sheldon	Monroe
Cole, E. V.	Oconto
Cole, H. E.	Sauk
Coldwell, John	Dane
Columbia Co. Nursery Co.	Columbia
Conover, F. K.	Dane
Corell, C. A.	Marinette
Cooke, W. D.	Brown
Cooke, Carle H.	Trempealeau
Cooley, C. F.	Dane
Cooper, H. O.	Marquette
Crawford, J.	Oconto
Crawford, M.	Outagamie
Crowley, John	Monroe
Curtis, Geo., Jr.	Dane
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Darbyshire, Abe	Iowa
Daub, C. H.	Eau Claire
Davis, Chas.	Monroe
Davis, J. C.	Winnebago
Davis, Ward	Winnebago
Delwiche, Ed.	Bayfield
Deuchart, Geo.	Brown
Dey, Scott S.	Columbia
Diley, J. F.	Winnebago
Doherty, E. G.	Douglas
Doty, E. P.	Rock
Drake, F. B.	Dane
Dunning, E. E.	Milwaukee
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Edwards, J. T.	Taylor
Ehlers, Theo.	Jefferson
Emery, L. J.	Milwaukee
Engsberg, Conrad	Jefferson
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Evenson, Jos. T.	Waupaca
Ewen, John	Manitowoc
Fadner, Paul	Calumet
Falge, Mrs. Louis	Manitowoc
Fargo, Mrs. Enoch J.	Jefferson
Fenlon, E. W.	Milwaukee

xxx WISCONSIN STATE HORTICULTURAL SOCIETY.

Ferguson, T. J.	Milwaukee
Filkins, C. B.	La Crosse
Fish, J. B.	Monroe
Fish, L. N.	Monroe
Fish, Elbert J.	Monroe
Fisher, L. S.	Monroe
Fisher, A. F.	Sauk
Fitch, W. H.	Wood
Floyd, Mrs. S. G.	Winnebago
Fortney, O. A.	Crawford
Foster, J. M.	Eau Claire
Fouch, H. E.	Marquette
French, Frank	Monroe
Fries, J. E.	Waukesha
Fuller, E. M.	Dane
Gabriel, H.	La Fayette
Gaffney, Wm.	Crawford
Gander, G. E.	Crawford
Gantke, Geo.	Monroe
Gentle, Geo. R.	Rock
Gerbracht, J. H.	Illinois
Gilles, Peter.	Milwaukee
Gilles, Jos.	Monroe
Gillies, J. H.	Dane
Gillies, Albert	Dane
Goedjen, Henry.	Manitowoc
Goelle, F. C.	Manitowoc
Goldfarb, S.	Sauk
Gongenbach, Ernest	Sheboygan
Grape, John	Waukesha
Grant, B. H.	Oneida
Green, Reuben	Jefferson
Haefner, G. F.	Monroe
Haentze, E.	Fond du Lac
Hahn, H. J.	Door
Halkney, A.	Winnebago
Halstead, H. L.	Sauk
Hamilton, H. P.	Manitowoc
Hansen, Neil	Manitowoc
Hansen, Christ.	Manitowoc
Harmon, Harry	Dane
Harper, Dr. C. A.	Dane
Harper, C. L.	Dane
Harper, Miss Blanchard.	Dane

Harris, S. L.	Taylor
Harris, H. H.	Monroe
Hartung, Louis	Manitowoc
Hartwig, Sam	Green
Hays, J. A.	Crawford
Hatch, A. L.	Door
Hatch, C. A.	Richland
Hatch, L. M.	Iowa
Heasty, Ralph	Monroe
Henry, M. E.	Winnebago
Heffner, Chas.	Crawford
Hemminger, P. C.	Jefferson
Heubner, E. A.	Manitowoc
Heydrick, Herman	Manitowoc
Hey, Chas.	Illinois
Higgins, A. M.	Walworth
Hildeman, E. S.	Shawano
Hill, A. W.	Marathon
Hill, J. N.	Sauk
Hinrichs, Ernest	Sauk
Hirsch, B.	Bayfield
Hodge, W. A.	Dane
Hoeffs, Aug.	Shawano
Hollister, A. H.	Dane
Holmes, J. B.	Walworth
Holt, M. A.	Dane
Holzhter, Walter	Dane
Hood Bros.	Sauk
Hopkins, A. W.	Racine
Hoppe, Julius	Sauk
Hopson, E. D.	Dane
Horton, E. W.	Iowa
Howard, A. E.	Manitowoc
Howlett, Mrs. D. D.	Winnebago
Howie, John	Dane
Howell, Horace	Monroe
Hoxie, Fred. W.	Barron
Hubbard, H. F.	Manitowoc
Hubbard, C. R.	Manitowoc
Hull, John, Jr.	Sauk
Hulbert, H. H.	Sauk
Huntley, Mrs.	Jefferson
Ihrig, J. J.	Winnebago
Ingersoll, Geo. W.	Lafayette

xxxii WISCONSIN STATE HORTICULTURAL SOCIETY.

Irwin, R. A.	Grant
Isaacson, Chas.	Douglas
Isom, R. A.	Dane
Jackson, Mrs. J. A.	Dane
Jackson, C. H.	Waukesha
Jacklin, H. M.	Waushara
Jacobs, L. M.	Sauk
James, P. T.	Richland
Jeffrey, Geo. J.	Milwaukee
Jewett, A. J.	Monroe
Johns, Prof. R. B.	Langlade
Johnson, Alfred E.	Waupaca
Johnson, Hans J.	Trempealeau
Johnson, Chas.	Crawford
Johnson, M. B.	Illinois
Jones, Geo. G.	Winnebago
Jones, Owen R.	Dodge
Jones, E. E.	La Crosse
Jones, Mrs. A. C.	Winnebago
Jordan, Mrs. E.	Langlade
Jordan, J.	Marathon
Jorgenson, Geo.	Waushara
Jurgensen, Nic.	Crawford
Kampen, H. W.	Columbia
Kaufmann, H.	Wood
Kelley, A. M.	Iowa
Keopcke, M. G.	Milwaukee
Ketchum, I. P.	Dane
Kidd, Z.	Richland
Kleffer, M.	Ozaukee
Kiloy, Daniel	Richland
Kinder, Peter	Crawford
Kindlin, C. W.	Jefferson
Kinstler, C.	Bayfield
Kirwan, Michael	Manitowoc
Klosowski, Rev. M.	Portage
Kneser, J.	Iowa
Kney, Mrs. Clara.	Dane
Knoke, B. A.	Outagamie
Koschen, Gustav	Milwaukee
Kornely, Chas.	Manitowoc
Krause, John	Jefferson
Kruschke, J. W.	Juneau
Kull, Andrew	Walworth

Kunst, Rev. C. J.	Sauk
Laird, Alex	Outagamie
Laager, Jacob	Clark
Lake Geneva Gardeners and Foremans Association.....	Walworth
Agern John, Balsdon James, Barratt James, Barratt Miles;, Barlow	
George, Best Wm., Button Frank, Cobb C. M. (Fontana), Dale	
Jacob, Dickenson H. M., Elliott Chas. (Williams Bay), Flem-	
ing Frank, Illenberger Henry, Johnson Axel, Hurry Wm.,	
Keuhne Frank, Larson Hans, Laurence W. H., Longland Wm.,	
Long Henry, Madison Chris, Meier Albert, Millar Fred,	
Mitchell James, Moore Wm. (Delavan), Morefield Clarence,	
McDonald John, Nelson Axel, Nills Raymond, Parshall Harry,	
Quinn Michael, Ruepke, Albert, Sangram Ed., Sandegard Chris.,	
Seal David, Smith A. J., Sobbe Joe, Shepard George, Short	
Benjamin, Tiplady John, Tolman Henry, Topolinski John,	
Towne Wm., Wallsteut Wm., Yekes Herman.	
Lamp, Robert	Dane
Lanktree, W. H.	Ashland
Larkin, Danford	Dane
Larson, Martin	Monroe
Larson, W. E.	Manitowoc
Laue, A. F.	Milwaukee
Lasche, A.	Milwaukee
Lawrence, W. I.	Door
Lemon, R. K.	Iowa
Lenicheck, F. J.	Milwaukee
Leonard, Wm.	Jefferson
Lester, O. A.	Crawford
Lewis, F. G.	Crawford
Leverich, J. W.	Monroe
Lillesand, L. E.	Dane
Lincoln, A.	Richland
Lippold, A.	Richland
Loewe, Arthur P.	Milwaukee
Loewe, Ed. C.	Milwaukee
Lohberger, Albert	Douglas
Loope, Eva.	Winnebago
Louis, A.	Richland
Mack, S. B.	Green
Madden, Tim.	
Magnusson, Peter	Eau Claire
Mallory, N. V. S.	Outagamie
Manning, T. E.	Kenosha
Mason, E. L.	Vernon

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Marshal, W. S.	Dane
Marshall, R. D.	Dane
Marshall, A. C.	Winnebago
Marshall, J. P.	Columbia
Marsh, H. F.	Langlade
Marsh, W. H.	Langlade
Marken, Otis	Manitowoc
Marriott, E. G.	Sauk
Marriott, Mrs. E. G.	Sauk
Maxson, Dr. O. P.	Illinois
Meachem, Geo.	Shawano
Meller, C. L.	Milwaukee
Melcher, Henry	Waukesha
Melcher, W. S.	Washington
Melville, James W.	Chippewa
Meyer, A. J.	Racine
Meyer, C. R.	Trempealeau
Mills, Geneveive	Dane
Miller, John	Monroe
Milward, J. G.	Dane
Mische, E. T.	Oregon
Mitchell, Richard	Crawford
Moore, J. G.	Dane
Moore, V. V.	Sauk
Moore, Henry C.	Juneau
Montgomery, L. E.	Sauk
Moseley, J. E.	Dane
Moyle, W. A.	Racine
Mueller, Wm. E.	Dane
Muhlenkamp, Fred	Monroe
Mulrenin, B.	Monroe
Muller, Miss E. T.	Waukesha
McCormick, F.	Crawford
McGovern, W. P.	Ozaukee
McKay, W. G.	Columbia
McLay, Geo. R.	Rock
Naud, George R.	Douglas
Nehs, C. A.	Waukesha
Neil, D. D.	Crawford
Nelson, Martin	Rock
Nelson, J. C.	Brown
Nero, Wm.	Ozaukee
Nienaber, B. H.	Manitowoc
Norrborn, C. G.	Shawano

MEMBERSHIP ROLL.

XXXV

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Oakley, C. F.	Monroe
Oakley, H. A.	Monroe
Oakley, Mary	Dane
Obrion, Ellsworth	Wood
Olin, J. M.	Dane
Otterholt, Henry	Barron
Ovenden, Frank	Dane
Oviatt, Dr. C. W.	Winnebago
Owen, Thos.	Columbia
Paige, Mrs. W. S.	Dane
Palmer, J. S.	Sauk
Parsons, A. A.	Winnebago
Patterson, A. C.	Rock
Paulson, J. E.	Manitowoc
Pearson, C. L.	Sauk
Pederson, C. T.	Barron
Pederson, Peter	Trempealeau
Pelton, George	Sauk
Pelton, M.	Sauk
Peltier, Eli	Manitowoc
Perry, Howard E.	Jackson
Peters, John	Waukesha
Peterson, P. A.	Douglas
Pfaender, Wm., Jr.	Minnesota
Pfefferle, S.	Outagamie
Phillips, Thos. L.	Manitowoc
Philipson, C.	Winnebago
Pinner, John	Waukesha
Planta, R. F.	Illinois
Plumb, C. L.	South Dakota
Pomeroy, O. R.	Crawford
Popp, John	Manitowoc
Porter, J. M.	Winnebago
Port, Mike	Ozaukee
Post, Lewis	Dane
Post, Lawrence	Dane
Potter, A.	Vernon
Powell, E. E.	Monroe
Powell, W. S.	Monroe
Powell, W. S.	South Dakota
Proudfit, A. E.	Dane

xxxvi WISCONSIN STATE HORTICULTURAL SOCIETY.

Rahr, Wm.	Manitowoc
Ramsey, Mrs. Robert	Sauk
Rasmussen, N. A.	Winnebago
Rastall, Benj.	Richland
Ray, Joseph.	Dane
Reek, Joseph	Winnebago
Reeve, Dr. J. S.	Outagamie
Reis, John	Richland
Reis, Albert	Richland
Reis, W. J.	Richland
Reinking, A. P.	Sauk
Rhodes, Ed.	Outagamie
Rice, Wm. V.	Pierce
Richmond, Susan	Dane
Richardson, C. L.	Chippewa
Richardson, James H.	Illinois
Riegle, G. W.	Dane
Risley, F. F.	Sauk
Rentschler, Geo. R.	Dane
Robbins, Edmund	Racine
Rockman, N. M.	Barron
Rodwell, Thos.	Sauk
Roe, J. W.	Winnebago
Rogers, A. J., Jr.	Dane
Rosenow, Arthur	Waukesha
Ross, V. M.	Crawford
Rounds, Mrs. S. A.	Winnebago
Roumelin, O. A.	Milwaukee
Ryan, Sam J.	Outagamie
Salzer, John A., Seed Co.	La Crosse
Sandsten, Prof. E. P.	Dane
Sansom, David	Sauk
Schenk, John B.	Milwaukee
Scheutte, Fred	Monroe
Schnieder, A.	Wood
Schmeling, Henry	Milwaukee
Schmidt, Frank	Winnebago
Schultz, J. L.	Jefferson
Shadrick, J. T.	Dane
Shenandoah Nursery Co.	Iowa
Shephard, Elsom	Winnebago
Sherwood, O. A.	Crawford
Sherwood, J. O.	Forest
Shuckhart, H.	Richland

Simonson, L. A.	Minnesota
Skewes, E. B.	Racine
Skinner, Prof. E. B.	Dane
Skinner, Mrs. Lloyd	Dane
Smith, B. H.	Rock
Smith, Mrs. J. G.	Dane
Smith, S. L.	Winnebago
Smith, Howard	Waushara
Smith, E. B.	Waukesha
Smith, Mrs. M. J.	Winnebago
Smith, Dean	Jefferson
Sorenson, P. J.	Kenosha
Spencer, W. H.	Manitowoc
Sperbeck, M. V.	Winnebago
Spry, John	Jefferson
Stanley, H. H.	Sauk
Stead, Mrs. Joseph	Winnebago
Steensland, Halle	Dane
Steel, Lillie	Milwaukee
Stephens, James W.	Fond du Lac
Stephenson, Ole	Manitowoc
Stevens, Hon. Ray E.	Dane
Stewart, Blaine G.	Langlade
Stoker, W. L.	Monroe
Stone, Walter	Waukesha
Stone, A. L.	Dane
Straker, Edward E.	Manitowoc
Sumner, Ed.	Dane
Telfer, Joe	Jefferson
Ten Eyck, A. A.	Green
Tenney, H. A.	Dane
Tennison, Henry	Winnebago
Thulin, Edward	Sawyer
Thurston, K. W.	Monroe
Thwaites, Mrs. R. G.	Dane
Tice, Jess	Winnebago
Tice, Ray	Waushara
Tiplady, Walter	Walworth
Timms, C. J.	Green Lake
Tiefenthaler, G. E.	Milwaukee
Torgeson, Theo.	Vernon
Trettin, A. H.	Milwaukee
Tripp, J. N.	Monroe
True, C. H.	Iowa

xxxviii WISCONSIN STATE HORTICULTURAL SOCIETY.

Tucker, W. O.	Racine
Tulledge, Everett G.	Fond du Lac
Tuve, S. O.	Minnesota
Turville, Thos.	Dane
Twining, M. W.	Crawford
Twining, B. H.	Crawford
Tyler, Grant	Manitowoc
Uecke, John	Outagamie
Ullbricht, Edgar A.	Milwaukee
Umlauff, Rudolph	Clark
Updike, Rev. E. G.	Dane
Utter, Delbert	Walworth
Van Kirk, Ed.	Monroe
Van Kirk, Leon.	La Crosse
Van Orden, J.	Sauk
Von Wald & Co.	Sauk
Waldo, Mrs. Flora.	Manitowoc
Walker, George	Door
Warner, Ernest	Dane
Wayne, Joseph	Grant
Weber, Frank	Jefferson
Wegner, Wm. E.	Jefferson
Welke, Sam	Eau Claire
Wells, Mrs. George H.	Dane
Wengler, M. B.	Milwaukee
White, W. F.	Langlade
Whiting, George H.	South Dakota
Wild, Chas.	Sauk
Wilkinson, Alonzo	Bayfield
Williams, W. D.	Monroe
Williams, Mrs. N.	Winnebago
Williams, John R.	Waukesha
Williamson, W. D.	Dane
Wilsmann, Wm.	Manitowoc
Wilson, B. F.	Marathon
Wood, C. L.	Monroe
Wood, S. H.	Sauk
Wright, Mrs. A. O.	Dane
Wright, B. H.	Monroe
Wright, George S.	Eau Claire
Young, A. W.	Chippewa

BUSINESS CARDS OF MEMBERS.

Barnes, A. D., Waupaca, nursery and fruit farm.
Bingham, D. E., Sturgeon Bay, nursery and fruit farm.
Brown, A. D., Baraboo, nursery and fruit farm.
Brown Bros., Watertown, nursery.
Buehler, J. G., Twin Bluffs, fruit farm.
Bennett, A. E., Grand Rapids, cranberries.
Barnett Bros., Chicago, Ill., commission merchants.
Chappel, F. H., Oregon, nursery.
Coe, Converse & Edwards, Ft. Atkinson, nursery.
Columbia Co. Nursery Co., Fall River, Wis.
Downing, M. B., Milton, nursery.
Fancher, W. E., Corliss, nursery.
Ferguson, T. J., Wauwatosa, nursery.
Fieldhouse, Wm., Reedsburg, nursery and vineyard.
Foley, M. F., Baraboo, nursery.
French, Frank, Sparta, berry plants.
Hanchett, Wm., Sparta, small fruits and plants.
Harris, H. H. and Sons, Warrens, strawberry plants.
Hatch, A. L., Sturgeon Bay, nursery and fruit farm.
Hatch, C. A., Richland Center, fruit farm.
Johnson, Franklin, Baraboo, small fruits.
Jeffrey, Geo. J., Milwaukee, small fruits and orchard.
Jewett, A. P., Sparta, nursery.
Kelley, A. N., Mineral Point, fruit farm.
Kellogg, L. G., Ripon, nursery and small fruits.
Kellogg, Geo. J. & Sons, Janesville, nursery and fruit farm.
Leverich, J. W., Sparta, small fruits and plants.
Loope, T. E., Eureka, nursery and fruit farm.
Mack, S. B. & Co., Monroe, nursery.
Manitowoc Seed Co., Manitowoc, field and garden seeds.
Marsh, W. H., Antigo, tree fruits.
McKay Bros., Pardeeville, nursery.
Meller, C. L., Milwaukee, landscape gardener.
Moyle, W. J., Union Grove, nursery.
Palmer, L. H., Baraboo, small fruits and orchard.
Pearson, C. L., Baraboo, small fruits and plants.

Philips, A. J., West Salem, nursery and small fruits.

Planta, R. F., Oak Park, Ill., arborist.

Pollworth, C. C., Milwaukee, wholesale cut flowers.

Post, Lewis, Madison, small fruits.

Ramsey, Robt., Baraboo, fruit farm.

Ray, Joseph, Madison, small fruits.

Reis, John, Ithaca fruit farm and nursery.

Richter, W. A., Milwaukee, landscape gardener and fruits.

Richardson, C. L., Chippewa Falls, small fruits.

Rentschler, F., Madison, greenhouse.

Rentschler, Geo., Madison, greenhouse and nursery.

Salzer Seed Co., La Crosse, field and garden seeds.

Sansum, David, Baraboo, market garden.

Shenandoah Nurseries, Shenandoah, Iowa.

Simon, H., Baraboo, fruit farm.

Sperbeck, M. V., Oshkosh, market garden and fruit farm.

Spry, John, Ft. Atkinson, small fruits.

Tamblingson & Son, Ft. Atkinson, nursery.

Toole, Wm., Baraboo, pansy specialist.

Toole Bros., Baraboo, seed corn.

Underwood, J. M., Lake City, Minn., nursery.

Utter, Delbert, Caldwell, fruits and vegetables.

Vaughn, B. M., Grand Rapids, market garden and small fruits.

Williamson, W. D., Madison, tree protectors.

Williams, Norman G., Shiocton, nursery.

EXCHANGES.

The Society has on file in the office of the secretary many of the leading horticultural papers, which are received in exchange for our reports and bulletins. The exchange list includes also the different Experiment Stations in the United States and many similar institutions in foreign countries. The Society solicits exchange of publications.

LIST OF PUBLICATIONS ON FILE.

American Fruits, Rochester, N. Y.
Barron County Shield.
Barron County News.
Better Fruit, Hood River, Oregon.
Country Gentleman, Albany, N. Y.
Farmers Review, 355 Dearborn St., Chicago, Ill.
Fruitman, The, Mt. Vernon, Iowa.
Farmers Voice, The, Chicago, Ill.
Fruit Grower, The, St. Joseph, Mo.
Green's Fruit Grower, Rochester, N. Y.
Northwestern Farmer, Menominee, Mich.
National Nurseryman, The, Rochester, N. Y.
Orange Judd Farmer, Marquette Bldg, Chicago, Ill.
Prairie Farmer, Chicago, Ill.
Rural New Yorker, 409 Pearl St., N. Y.
Wisconsin Agriculturist, Racine.
Wallace's Farmer, Des Moines, Iowa.
Wausau Pilot, Wausau, Wis.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

SUMMER MEETING.

The Summer Meeting was held at Shiocton on August 28th, 1907, President R. J. Coe in the Chair.

The morning session was opened with prayer by Rev. Mr. Jordan.

The President then introduced Mr. W. D. Boynton, of Shiocton, who made the address of welcome.

ADDRESS BY MR. BOYNTON.

Mr. President, Ladies and Gentlemen:—I presume when this meeting was called for Shiocton some of you had to get out your map or atlas and look up that little place. If I recollect rightly, it is the smallest place that ever had the honor of a State Meeting of the Horticultural Society, and I assure you that Shiocton feels the honor very keenly. There are perhaps some reasons why it was brought here, say some three or four prominent reasons, and I think perhaps the leading one was the fact that Shiocton had

been taken hold of quite severely lately by some Chicago capitalists, or Illinois capitalists, who created a land company here for the purpose of developing some four or five thousand acres of our waste lands. President Bridge has been one of the motives or powers back of this gathering; he has advertised it very freely, and he has commenced and performed a very large and unique work in the way of drainage and land improvement, and this Land Company has brought here a very noted horticulturist, Mr. Crawford, of Ohio, and that is another very strong card that helped to secure this meeting for Shiocton. We have appreciated Mr. Crawford's presence here very much this summer. Not only is he celebrated as a horticulturist, and justly celebrated all over this country and has been in the work through a lifetime, he is known in every state in the Union, but he has written for all the leading agricultural and horticultural papers and wherever he has worked he has done good work, we may be sure of that. But he has also pleased us personally very much; we have found his kindly presence in the community a very great boon, and we cannot say too many good words for Mr. Crawford who has been carrying on the work for the Shiocton Land Company.

Perhaps another leading motive for bringing this meeting to Shiocton is the fact that we have here Mr. Eben E. Rexford, who has been a resident of this town all his life nearly, and who is also a writer of national and even international repute, and his especial work has been along the floral line, and this is a floral meeting. Mr. Rexford is the author of several noted books on floriculture, particularly those of an amateur character for the home flower grower, and Mr. Rexford has also attained considerable fame as a writer of verse and prose, so I think we may give Mr. Rexford quite a bit of the motive of bringing this meeting to this place.

Now the conditions of Shiocton have been peculiar in the past. I want to give just a few words, stating why Shiocton should be noted particularly at this time. It is quite a small town, there are lots of larger towns in the State, but consider the fact that this was a tumble-down lumber town some twenty years ago, and consider the fact that in the late eighties and early nineties fires swept over these swamps. Swamps pressed up against Shiocton on both sides, the tamarack pressed into the village on the east and the same on the west, so that we have

been between two swamps until those dry years successive fires swept off the timber and succeeding fires completed what the first ones started, and from them it was burned clean, a part of the land burned, part of the moss burned and it left it like a great prairie. People who owned these lands could plow a mile long furrow and they did so in a great many cases. Some of the outside land owners did not improve the opportunity of holding these lands, cleared as they were by the fire, but let them grow up to brush again, and so you see patches of brushes and very unsightly stretches of land. But these great fires left the ground coated with ashes and a great many people put grass in and it threw up tremendous crops of grass each year, then it subsided and we found we would have to go into those lands and farm and cultivate with manures like any other land, so the vegetable business naturally started in. We had started that before the fire in a mild way, but after these fires it opened up these large areas just adapted to vegetable growing, and C. A. Kerr of Chicago started in here and built a very large stone storage warehouse, and the farmers around here have been building storage sides. Now we have a large storage capacity for vegetables, in rank this place stands next to Racine in the production of vegetables, and there is another point why the State meeting should come here. We now stand ahead of Green Bay on the production of coarse vegetables, and we must stand next to Racine.

We have found, as I said before, that our land needs fertilizing, we have also found that these lands needed drainage, very flat, low, level land, and the land was sour from the long succession of wet years after the dry ones, and it needed just the work that the Shiocton Land Company is putting in to demonstrate the value of these lands. They have instituted a large system of drainage, they made something like 6 miles of ditches, I think their plan called for something like seven or eight miles of canals these are canals twenty feet wide on top and ten to six feet deep; the plan is to lead into these drains by means of tile drainage to get the best results.

I simply want to say for myself that it is a very great pleasure to meet you here. I used to meet with the State Horticultural Society twice a year and have been in the work for a good many years and it is a great pleasure to meet you all here.

Speaking for Shiocton, I want to say there is nothing too good for you in this village. We appreciate the honor of your coming here and we appreciate the disadvantages we labor under; we have small hotel capacities and we have provided against that by going to private families and there is not a house that has a spare bed but that will welcome you, and we hope no one will go away tonight that wants to attend this meeting because they have not any room to stay. Shiocton is wide open to you and extends to you a hearty welcome. (Applause.)

The President—I am sure all the visiting horticulturists are very grateful for these hearty words of welcome. Horticulturists you know are good natured people, the best natured people in the world, and so then it is a great pleasure to us to come here and meet the horticulturists of Shiocton. We expect to have a good time, and I know we will not be disappointed. When the invitation was first extended to the Horticultural Society to meet here for their summer meeting there was a great deal of doubt expressed as to whether it would be wise to hold a meeting in a place of the size of Shiocton, because you know Shiocton is not the largest city in the state, but I see we have made no mistake; we are very much surprised and exceedingly gratified at the audience we have here this morning, it seems to me it is about the best attendance we have had at any horticultural meeting in a great many years, and so then we are glad to meet with you and we will be sorry to part from you.

BULBS, CORMS AND TUBERS.

E. G. ARZBERGER, Madison.

It has been the poets privilege to give expression to his fancies in regard to the beautiful and charming structure, like those surrounding you, which issues forth from bulb, corm and even from such an odd looking form as the tuber. He has painted for us the inflorescences in beautiful similes and metaphors, he has crowned them with the best of prizes to express his deep felt sentiments. Yet little do those parts which possess the vital

elements, the wonderful life processes, which produce all the harmony and beauty which he sees and feels, seem to attract his attention. He probably considers this too crude and inartistic and has left it for others to describe in a more humble language. This is the theme assigned to me and I shall describe in a simple way the structures and functions of the bulb, corm and the tuber.

These plant structures must not be confused with the root or any of its modified forms as the tubercles; for the morphology and functions are utterly different from what is found in the root. In the plant there are usually two distinct parts, which can readily be noted, viz: the root and the shoot, the latter being made up of the stem and foliage system each of which may be highly differentiated. These three parts are distinctly shown in an ordinary living tree where the three parts, roots, stem and branches with leaves are quite apparent. In the bulb, corm and tuber there are present these structures in some form or other, altho they are not so large and distinct.

The bulb is considered as an erect underground shoot or sometimes called a leaf bud, the short stem of which is covered with relatively long and closely packed scale leaves. The internodes are hardly developed. The scale-leaves arising from the stem are usually thickened and form the conspicuous part of the bulb, and usually enclosing the stem. In the vigorously growing bulb, the roots originate from the lower part of the stem.

Bulbs are usually spoken of as scaly bulbs and coated or tunicated. The scaly bulbs are those in which the leaf bases are very narrow and elongated, lying adjacent to one another like the shingles on a roof, e. g. (*Lillium martagon* and *album*). The tunicated or coated bulbs have scale leaves, the bases of which are large, broad and concave and are so arranged on the bulb that the inner ones are entirely covered by the outer ones, for example, as in the tulip, onion and hyacinth. The structure of a bulb can easily be made out in any one of these. When such a bulb is cut down thru the middle, it is seen to be made up chiefly of swollen bases of last years leaves. Inside there are young leaves and the delicate flower bud which will expand with its flowers the next season. On the outside there are a few thin scale leaves. All these leaves originate from the fleshy stem at the base known as the "button" which gives off the roots from the lower part.

The scale leaves vary in number. In *Gagea* there is but one scale leaf covering the bud partially; in the tulip and *Eritillaria* it varies from two to five, while in the lilies and hyacinths there may be a great many. When fresh the scale leaves of the cultivated bulb are quite thick, but when old and dry they become thin and papery and peel off quite easily. Again on some forms the scale leaves are united as e. g. in *Eritillaria imperialis*.

The function of the scale leaves on bulbs and also on corms is chiefly as a storage organ. The young shoot, the base of which they cover, when it begins to develop, withdraws food material from the scales until the large foliage leaves emerge from the ground and are able to manufacture new organic material to be used as food, which is usually in the form of starch or glucose, a form varying with other organic acids, available to us. Bulbs are protected from drying up by the soil surrounding them, but it is also very essential that they be protected from the attacks of insects and various other enemies. In addition to the poisonous substances for keeping off their attacks further protection is offered by the exhausted and dead scale leaves which do not disintegrate completely, but remain as a protective covering. At times they form a rigid parchmentlike infestation from thick reticular and latticed strands remain as a sort of a mask within which the tender bulb is enclosed and protected. Examples of this may be seen in the *Crocus*, *Gladilous*, wild onion, leek and the tulip.

In the axil of the fleshy scales young buds appear as buds which ultimately form the new bulb for the next year. These later buds often remain attached to the stem and produce flowering shoots so that it would appear that the same bulb continues to flower for many years, e. g. in the Hyacinth and Tulip. Again in others, the young bulb is detached forming a separate plant. Midway between the bulb and the tuber is a structure known as the corm or solid bulb; common examples of this are the *Gretis*, *Gladilus* and Indian Turnip. It is often mistaken for a bulb but usually because of its shape rather than structure. This is likewise a solid fleshy underground stem being related to both bulb and tuber. It is related to the bulb because of its short compact fleshy stem which is surrounded by a few thin scale leaves. In some forms these are entirely absent. From the fact that it is very short and fleshy, usually more or less rounded, or

the name root-bulb is applied to it. It is in the fleshy rounded stem where a great deal of the surplus food is stored. The plant possessing such a structure is thus able to flower very early without waiting for foliage leaves to supply the food; or late in the season when it needs to depend but little on the activity of the foliage leaves, for example the Crocus and Gladiolus.

The corm usually bears one, or more buds, the entire structure being surrounded by a tough tunic of scales. When the corm begins to grow, roots are sent forth from the lower end of the stem, the leaves and flowers of the buds expand, and the entire inflorescence appears in view. Long after flowering the foliage leaves continue their work, preparing food which is sent down to accumulate in the new bud and stem, which becomes swollen, forming a new corm for the next year's flower. When this is done the leaves die down their bases becoming the protecting scales for the new corm.

The corm like the bulb is only of one year's duration, sending off buds annually in the form of young corms. In the fall, or after the foliage begins to die down, the young corm gives rise to leaves, the lower of which form the ordinary protecting scales around the corm and flower stalk, while the upper leaves remain green. In the axil of these uppermost leaves the flowering stem develops and produces the flowers the following year. Meanwhile in the axil of the middle leaves on the corm, a bud, a new corm, is formed which enlarges at the expense of the parent, and thus the cycle of life goes on. All these structures are prepared long beforehand in a reduced form ready for the appropriate time to come when it may issue forth in all its glory as the "buddinger of spring."

Probably the structure that is most frequently mistaken for a root is the tuber of which the potato is the most typical and familiar specimen. The number of plants which produce and are produced by these structures, however, is not so great as that of the other two types. The tuber, again, is a form of an underground stem or shoot, which has become much thickened forming a spherical or ovoid structure filled with food material that has been manufactured by the leaves in excess of its immediate requirements. The true nature of the tuber is revealed by its buds or "eyes" as we commonly call them, which indicate the nodes that have been much pushed together and the internodes which

have become much swollen. This morphological nature is clearly shown by uncovering the underground shoot of the potato plant and it will develop into ordinary foliage shoots. And if the development of tubers is prevented by cutting them off or other means, the buds in the axils of leaves above ground will develop tubers. Thus showing clearly that the tuber is a stem, morphologically. The buds are spirally arranged, similar to the arrangement of buds on stems on other plants. This may easily be shown by inserting pins into the eyes and connecting them by a string. The eyes which we find on the outside of the tuber are actually axillary buds, from which the subsequent year's growth will be produced. The scale leaves as prominent in the bulb which represent the subtending leaf of the bud are so very small that they can only be distinguished on very young tubers. In older tubers they are almost insignificant, appearing as mere ridges, scarcely discernible externally. The scale-leaves are placed so far apart that a big clear space is left between them and they are never placed so close together so that they envelop one another as they do in the bulb. Another difference between the bulb and tuber can be noted in that the scale leaves are the structures wherein food is stored, and at the same time serving as a protection for the young bud; whereas in the tuber the food is stored in the distorted stem and the scale leaf has become rudimentary, having hardly any function at all. Another difference may be noted in that a majority of cases the young bulb arises in the axils of the scales and develop subsequently into new bulbs which are not removed from the position held by the parent. It is evidently an advantageous arrangement when tubers from which new plants arise, are formed at the end of long shoots, since the new structures, thus developed, are far from the parent plant where the soil has not been exhausted of its nourishment.

Most tubers, however, are very perishable structures. All those which appear as local thickenings of an underground shoot, as the potato, grow very rapidly and then have a resting period of about a half year. They perish completely after having developed shoots which unfold their green foliage above ground. Generally tubers are found underground, but not infrequently they are found above the soil in the axils of foliage leaves, e. g. in Lesser Celandine (*Ranunculus Ficaria*) where these tubers arise in half axils. Later they become detached as



Missionaries preaching the gospel of beauty in a neglected back yard. Sent by the parent plants on the other side of the fence.



Hybrid Rosa Rugosa, pink, double. A trifle more showy than the single-flowered type but strictly a June rose while the single form commonly blooms in autumn as well as in June.

the plant withers and in places where they are produced in great quantities they have given rise to a myth known as "Pototo Rain."

Thus in these three forms the bulb, corm and tuber, there are present many homologous structures some quite similar in structures and function. All forms are underground stems or shoots possessing the power to be used by the young plant in a future time.

The significance of bulb and tubers in the life history of plants, producing them, is to develop new vegetable and floral structures with great rapidity. For example a new plant completely equipped for work may be obtained in a very much shorter time than from seed. Such a habit if it may be so called enables these plants to take advantage of short seasons and still accomplish their life purpose. These plants have two distinct life aspects corresponding to a greater and lesser physiological activity; or a period of rest and one of great activity. One is exemplified in the bulb, corm or tuber, the other in bright fresh green foliage crowned with a flower displaying its beautiful colors. Nature has thus wisely made ample provision so that many of her floral as well as vegetable decorations of woodland, field and garden may outlive the many adverse conditions that might befall plant life, so that we may enjoy them in early spring, late in autumn and at all times during the summer.

DISCUSSION.

Mr. Toole: I would like to ask the Professor just what class the dahlia belongs in. I suppose we are all correct in calling it a tuber, and yet its growth is so different from the potato or rutabaga and the different things one can mention that have been always considered tubers, and I would like to ask if it is correct to call it a tuber?

Mr. Arzberger: We have many varieties that grade between the two; we have those that grade from the corn down to the tuber and we have some varieties that are neither, that you cannot call either a corm or a tuber, and then again we have so many tubers that shade off into structures that are something like that of a root. We have many wild plants that are some-

times called tubers; stems that are very hard to classify as one or the other. ^{on Mr. Toole} I suppose that this is of interest to us horticulturists in an economic way, both the floriculturist and the gardener, because we can put away for their season of rest and store up these things, those that have stored up nutrient for the future we can store them up for our convenience without much care compared with other plants. But we have another class that no place is given to like the beet and such, how shall we call them? In wild plants you will find some that you cannot classify under any of the three classes. How shall we classify our beets and others? They are certainly not corms or tubers. ^{Mr. Arzberger} They are simply fleshy roots, simply enlarged roots holding food material. ^{Mr. Axley} I think that is the best way to describe them. ^{Mr. Toole} It seems to me we ought to have a class name for them. ^{Mr. Arzberger} They are classified as fleshy roots. ^{Mr. Axley} A gentleman asked if the sweet potato was not a tuber. It is a root, there is no bud on the sweet potato. ^{Mr. Smith} It wonder if the gentleman has ever planted a sweet potato. He says there is no bud on the sweet potato; you plant one and the stalks come out all over it, and in large numbers on the sweet potato, I wonder where they come from.

Mr. Axley: That is right. There are a great many roots that you can plant and they will grow branches all over. You can take raspberry and plant a branch, it will form a root, any bud will form a root, some roots will form buds when they are put in proper condition, just the same as some stems will form roots, it gets the root stimulation through the soil just as soon as you bring it in contact with the moist soil, and the condition of the soil will stimulate the production of roots, as the case may be. You take any stem, you can put it in contact with the soil where the moisture is and that is going to stimulate production of root, and so under the right condition you can stimulate the production of the root plants. In regard to the sweet potato—now I am not a horticulturist, I have not been in that as a business, but all authorities call the sweet potato a fascicle root and the dahlia is a fascicle root, it is simply an enlargement of the root in which food is stored away, the proper stimulation comes by placing them back in the soil.

Mr. Tiplady. If you cut the eye off a dahlia, do you presume for a minute that the ground will stimulate an eye on the blood tuber? Mr. Axley. No, not in the case of the dahlia, but I do mean to say that when you are cutting the eye off the dahlia you are cutting the stem; an eye is a bud and a bud is an undeveloped stem, and the base of the bud will develop roots and the other parts will develop the part that comes up above the ground.

parts will develop the part that comes up above the ground.

Mr. Arzbergens. I have always considered them as underground stems. I will let the subject go, and pass to the other. The President in **We will go on to the next subject**, I will announce the committees at this time. For fruit and vegetables, Dr. Eeope, for flowers, Mr. Button of Lake Geneva. I hope Sir Influenced that, when alarm is given at the Congress, to encourage to exhibit living out-of-doors mould boxes or live box, and living out mud, living plants, and, above all, report live shrubs and flowers living in a vase, living growing, living from the same container, and in the last case, of not less than two years, the result to poor old men. Living growing, a living plant, the vase of modest old bees, more than a year, a certain period. It is usual, especially in the beginning, to plant a lot of old bees, and

THE CANNA.

Canna is a Latin word signifying cane or reed, *Canna Indica*, Indian Shot so called from the fruit which is a capsule containing half black seeds. Order Scitamineae, a large genus of herbaceous perennials, a native of East India has a beautiful tropical appearance with its large green leaves and upright habit. *Canna Euthalis* is grown extensively in the Sandwich and other islands the root being used as a vegetable in place of the Arrow-root, also *Canna Coccinea* is used the same. *Canna flaccida* is a native of southern United States.

The Canna is very extensively employed in sub-tropical and other methods of summer gardening. They have very graceful habits and beautiful glossy leaves which gives a beautiful tropical effect.

In Lentist time, 1753, there were three varieties, 1793 there were 4 varieties, a Frenchman by the name of Bousheau in 1844 marked 64 varieties.

A new section was introduced in 1864 by Mr. Croset of France, then Mr. Crozy introduced his new Hybrid Canna Madame Crozy, soon after this time they were introduced into the United States

and by careful and skillful hybridizing there have been many beautiful new varieties introduced. The new varieties outstrip the old, in fact they combine the gorgeousness of the Gladiolus with the beauty of the Dracaena and may be used with beautiful effect in the summer gardens as borders or on the lawn in beds of all shapes and sizes or as screens or dividers, or border to give color when the other plants are not in bloom or mingled among shrubs.

There are many new varieties introduced yearly to take place of the old ones but some of the old varieties live with us for many years. There is no more beautiful bed in a large spacious lawn than the Canna of one or more varieties and color and graded heights. The new varieties are gorgeous when used as screens or when placed in front of shrubs with their beautiful glossy leaves and rich colored bloom against the green foliage of the shrubs and trees. Few plants are more easily grown than the Canna or more quickly propagated and they will grow under most any circumstances, but to obtain the best results care must be taken to succeed. The canna is propagated from the root or by seeds, many of the newer varieties come fairly true from seed.

When propagated by root the roots should be separated with from 1 to 3 eyes as preferred and then started in a bed of sand or very sandy soil in a temperature of from 50 to 60, some prefer a high bottom heat and start late, but to get the best results start your bulbs in a bed the latter part of February and then when well rooted pot up in 4 or 5 inch pots and place in a temperature of 50 degrees and they will make a very strong sturdy plant ready to bloom in the spring and continue to bloom all summer. They will begin to bloom earlier than if grown with a high bottom temperature and obtained a weak rapid growth which is effected by transferring to the open ground.

If propagated by seeds the seeds may be planted in February in a warm place of about 60 degrees. If soaked in warm water for twenty-four hours germination will be materially stimulated or file the end of the seed. A light soil is suitable for the seed such as sand and leaf mould and when the plants have made two green leaves they should be potted off into three inch pots and placed in a temperature of 60 degrees or so during their earlier stages and shifted as required until planting out season. By this time they should make fine strong plants which will bloom all summer.

A good rich soil with plenty of moisture and drainage is very suitable for the Canna.

The Canna is also very effective indoors as a pot plant in conservatory or porch decoration. As their growing season is very long, for this purpose, they may be grown in from 8 to 12 inch pots and if well cared for will last a long time and be very effective.

The old varieties of Canna were grown almost exclusively for their foliage, as the flowers were very small and inferior, but the new varieties are a great improvement in both flower and foliage.

I will not stop to enumerate the old varieties. There is one old variety, La Grande Rouge. It has long narrow pointed leaves of a deep almost purple bronze, very upright habit which foliage has hardly been surpassed in the new varieties. Among the new varieties there are many and I will endeavor to point out some of the best and newest varieties for bedding purposes.

Alphonse Bouvier 4 to 5 ft., strong grower and crimson flower; Beaute Des Marcher, 5 ft., color, salmon pink; Buttercup, 3 ft., compact, bushy habit, free bloomer, bright yellow in color and a fine bedder, one of the best yellow; Chicago, 4 ft., one of the best red varieties, a large flower and free bloomer coming in early; Crimson Bedder, 3 ft., a fine intense scarlet, very free bloomer. David Harum, 3 ft., dark bronze foliage, flower rich vermillion, good grower and bedder; Egandise 4 ft., foliage rich dark bronze, strong, compact flower, spikes currant red, the finest bedding Canna of its color; Florence Vaughn, 5 ft., green foliage, one of the best type of the French Cannas, flowers a rich golden yellow, thickly dotted with bright red, it is a fine grower and a good bedder, one of the best; Madam Crozy, 3 ft., fine dwarf, green foliage, with bright flower, vermillion with yellow border; a good durable variety; Martha Washington, 3½ ft., green foliage, one of the finest pink Cannas, flowers extra large, rose pink, stands the sun very well; Niagara, 3 ft., good bedder, crimson flower, green foliage; President McKinley, 3 ft. green foliage, medium size flower, color deep crimson, a profuse bloomer; Queen Charlotte, 3½ ft., green foliage, rich orange, scarlet with gold band, fine strong flower, good bedder and free bloomer and stands the sun well; Souvenir D'antoine Crozy, 4 ft., green foliage, flowers scarlet crimson, bordered with yellow;

Black Beauty, grown for foliage effect; flowers small, the broad tropical foliage is of the deepest crimson bronze, a fine grower, 5 to 6 ft., the best dark foliage Canna; Comte De Sach, 4 ft., foliage deep bronze, green large flower and very bright and large head with a clear bright crimson scarlet, a continuous bloomer and a fine bedder; Express, 2½ ft., green foliage, flower a bright scarlet crimson, large broad petaled flower, immense compact trusses, the finest of all dwarf Cannas, a fine border Canna and bedder; Francois Nordy, 3 ft., green foliage, a good red; Papa Nordy, 4 ft., new French Canna, a strong upright grower and free bloomer, large round flower of a beautiful purplish crimson, spikes large and numerous and are carried well above the foliage, a magnificent Canna; a fine bedder and stands the sun well; Louisiana, 6 ft., foliage a glossy green, fine grower, fine large flower, scarlet, good bedder; Mont Blanc, 3 ft., large, beautiful white, the best white; Mr. Wm. F. Kasting, 3½ ft., color crimson, a good Canna; Allenmania, 4 to 5 ft., foliage green, outer petals yellow with inside of bloom scarlet, orchid flowering; America, 4½ ft., bronze foliage, the spike very red and the flowers enormous with a yellow throat and petals of glowing red flamed purple, a fine orchid flower; Barbark, 5 ft., green foliage, immense flower of the orchid type, color a rich canary yellow, inner part of petals fine crimson spots, grand flower and bedder; Italia, 4½ ft., green foliage, color yellow and red, a fine orchid variety; Pennsylvania, a fine orchid flowering variety, color scarlet and yellow.

Among the newest varieties are R. Wallace, 4 ft., green foliage, a fine yellow, a good bedder, upright habits; Victor Lemoine, 3½ ft., color brilliant, garnet flower with purple foliage, very free flowering, a fine new variety, strong grower; New York, a beautiful new red Canna of enormous size, a promising variety; King Humbert, the finest of all Cannas yet introduced, foliage of the most beautiful bronze, very strong and robust growers, immense trusses of orchid flowers, standing high above the foliage, color bright orange scarlet. No Canna has ever caused such a sensation as this. It is a grand variety in every respect.

There are a great many more Cannas but I will not take any more time in naming varieties. We should all lend a hand to make the Canna even more attractive than it is at the present, and to develop the beauties and the grandeur of the varieties

which we still grow. There should always be a good place reserved for the bright and welcome Canada. Its fine foliage and continuous bloom should always be welcome on every lawn. The more you care for a Canada the better they like you. The who have

The Canna is not like many other plants that have its flowering season and then bids farewell for that season; but when it commences blooms until frost comes and destroys it. Now let us one and all try to bring the Canna to the front and give it what it deserves and welcome it on every lawn and in every park.

A Lady: I would like to ask if it makes any difference whether the roots are divided in the fall or in the spring?

Mr. Button: We usually divide in the spring, store in the fall and divide in the spring for convenience.

The President: How do you store them? I want to know how I can store them in my cellar. I have tried but never succeeded.

Mr. Button: Store them in any dry place, in dry sand; do not have it too dry, because the tubers are likely to dry up. In a cellar that is heated with a furnace it is hard to keep them, because they get too dry. They want to have a cool place. We just put them under the benches in a cool greenhouse and they always keep well.

Mr. Smith: I have stored cannas a great many times and always come out the same that the president d'd. Cannot the speaker give us some rule that will apply to some thing that we know something about? I think there are very few of us that know about keeping cannas. Will they keep along with potatoes, with beets, carrots and cabbages? Cannot you put them with apples, or something of that kind? Is there not some rule by which we can know, rather than not keeping them too wet or too dry. That is too much like a woman's recipe for a cake,—put in a little of this and a pinch of that and a little of something else.

Mr. Tiplady: I would like to answer Mr. Smith in regard to keeping the canna. The canna is a tropical plant and it would be very unwise and very foolish and with very small regard to

natural conditions, to try to keep a canna with potatoes. However, if you have a cellar that is neither too warm or too cold, that will do for potatoes. For cannas you must have it warm and dry, and you must watch the tubers as they go through the winter.

Mr. Smith: What temperature?

Mr. Tiplady: Temperature of sixty, or temperature of fifty; you can find cannas kept in both under the greenhouse bench; you will find at a temperature of 60 cannas will go through all right, you will find temperatures of 50 where they will also go through all right. It must be dry and reasonably warm and you must watch your cannas, go to them once and a while and see how they are getting along, same as you would with raising cats, the canna has life as well as a cat. You must catch that canna on the decline, not go to it after it is affected and dead.

Mr. Smith: I want to know what to do with it.

Mr. Tiplady: If your canna has dry rotted, it has been too dry for the canna, the chances are that you should have moistened it; if it is rotted with moisture, the chances are that you kept it too wet. If it is too cold it will die. When I say cold I mean below forty, that is strictly against the well being of the canna.

Mr. Smith: If it is too warm, say 70?

Mr. Tiplady: They will grow. If you see signs of growth you can retard that growth by making it colder.

Mr. Moore: In regard to keeping cannas—I do not give this as a rule, just telling an experiment the last couple of years in keeping cannas; we simply take the roots and throw them in a bunch into a cellar where the temperature is about 60 degrees, let them lie right there; we take them out and about 75 per cent of the roots are growing. We have done that for two years. I do not want to give that as a rule, but that is our experience. It worked for us.

Mr. Rieck. I would like to ask if the cellar was light?

Mr. Moore: No, the cellar was dark.

Mr. Rieck: Was the atmosphere in the cellar dry or damp?

Mr. Moore: I could not say. It was a cellar which was too dry for keeping apples, too warm for keeping apples, and also the same for potatoes.

Dr. Loope: I wish to say this,—they may talk all they please



Bechtel's double-flowering Crab.

about this, and we have had the talk over and over again in all our societies whenever the subject of cannas has come up, but the fact remains that the average man cannot keep a canna; now that is a fact, a real fact, and I have given up trying.

Mr. Button: I will tell you the way we keep them; let them freeze down in the fall, the weather gets pretty cold before we start to dig, then we dig them right up, shake off the loose dirt, place them on the ground that is pretty nearly dry under the greenhouse bench and leave them there under the bench at about 50.

Dr. Loope: How far down do you let them freeze?

Mr. Button: Oh, say the ground freezes perhaps an inch, hard. I have kept them twenty years and hardly ever lose a canna. We never dry them entirely off. If you keep them in a dry temperature the chances are they will shrivel up and you will lose 50 per cent or more of them, but if you keep the temperature moist at 50, keep them in sand in the cellar, or you can keep them laid away in a corner of the cellar where there is a temperature of 50 and moist atmosphere, I do not mean wet, not so wet but what they will hold their substance, and then they will keep all right.

Mr. Rieck: Do you take all the soil off?

Mr. Button: Nearly all the soil off; we do not take it all off.

Mrs. Trevelen: I think there is a difference, in some seasons they keep better than others. I will tell you my experience in keeping cannas, and I have done so for several seasons. I take them out, as this gentleman said, just as the first frost comes—of course I do not have them on a large scale—but I put them into pails or boxes and I put them right in the cellar, the same cellar where I do my washing, and I let them dry out; there is a furnace in the cellar and I have kept them successfully through the winter, right in the dirt as I take them out.

Mr. Uecke: I have experimented somewhat with keeping cannas for the last three years. I have tried to keep them in dry sand, but I always find they come out minus in the spring, blackened and injured.

Mr. Henderson: We have found a great deal of trouble arises from the time they are dug. If you allow them to get frozen down too far, you will undoubtedly lose your cannas.

Mr. Uecke: Will you please specify the time?

2—Hort.

Mr. Henderson. That I cannot tell you, but I know you must not let them freeze down to the ground while the stalk is about quarter ways from the ground, because if you let the frost get down to the bud or eye, your canna is gone. We go through our cannas constantly and any that are getting black put them right in the bench and start them. That is the only way we can save them. Of course seasons vary, frost comes earlier some seasons than others, but our men sit up nights watching the cannas. We have found that is about where the trouble is, or a great deal of it, anyway.

Mr. Smith: What is the nature of the canna root, is it root or bulb or tuber or corm?

Mr. Arzberger: It is a root-stock.

Mr. Toole: I would like to emphasize what has been said in regard to raising cannas from seed. I should say, soak them in hot water rather than warm water, but still more safely to file through the coating of each one, after that they germinate rapidly. You are not sure of what you will get, but you will get a bloom the same season, a fine, choice lot of cannas that are worth having, so that you are not particular about grouping colors together.

The President: It is not always that we have a Congressman with us. A Congressman I suppose is, or I suppose should be, like an electric light, all you have to do is to touch the button and get results. I will call on Mr. Kuesterman to give us a talk.

Mr. Kuesterman: This is rather taking me by surprise. I am a splendid listener, and I could have stayed here all day with you to listen, but I am somewhat backward in speaking. However, as matters are, I will meet the occasion the same way as the young lady who was asked how it was when she received the first kiss from her lover, "Why, she said, I met the emergency face to face."

Now let me say to you, that I am pleased above all to be with you, because I like flowers, I have always been greatly interested in gardening, and consequently I like those who like flowers. They have a proverb in German that says, "If you want to find good people, go among those who love music and flowers." That is, one that is charmed with sweet melody, one that is charmed with the fragrance of flowers, cannot be bad.

About two weeks ago I returned from a trip to Germany,

and while there, recollections from younger years came to me, and one of the most pleasant ones was our little garden. Now, my friends, while I say "Our little garden," it was not in reality our little garden, but over there they have very wise city government and they, knowing there are a great many poor people living in the city, my parents among them, they rented out garden lots to these people, say about 50 by 100 feet; oh, and how proud we felt of this, our garden. Why we never allowed any weeds to grow there, and in fact sometimes going there we were very sorry not to find any weeds, because we wanted to work. It is a splendid arrangement, and I wish they would introduce it in this country, to give everyone a garden, no matter how small it is. Over there they will even see to it that the poor people have their little orchards and they do it in this way,—they grow fruit trees along all the highways, everywhere you will find apples, pears, cherries, walnuts and all kinds, and before they are fairly ripe they say to the people, "We will rent you these trees, sell you the fruit for whatever you can afford to pay." My father went and bought, say, ten of those trees, and what a pleasure it was when the time came to take off the fruit. There was no trouble about people stealing the fruit, or boys getting away with a lot of it, because in the first place, they are quite law-abiding, and, secondly, they have good overseers to look after them, and so we always had our fruit, and I think it is an arrangement that would also pay in this country. Why not have fruit trees along your highways? It gives you fruit and it helps to bear the burden of taxes. Why, over there again and again they told me the taxes were paid by what they got for the fruit.

Now let me tell you about the smallest garden I ever saw in my life, it was one four by six feet, it was in a blind institute in Pennsylvania. The president of the state board of control and I looked over some institutions and there I found a lot of these little gardens for those blind children. One of them took me by the hand, a little seven-year old girl, and said, "Oh, I want you to see my garden," and there it was. And I tell you, it was touching. In the first place she was counting, there were marks she could not see, but she could find her garden, and when she came there she said, "Look at that beautiful rose," she could not see it, and then again she said, "You see that little tomato plant, now is not that growing nicely," and she felt of it, and in

bending down she said, "Oh, that nasty weed." She knew the difference between weed and plant, and so she kept her garden in splendid shape.

Now, my friends, it is not my purpose to delay you long, you are all waiting for dinner. However, I may say one more thing, that when in Berlin a short time ago I there saw a rose farm, twenty, thirty and more acres, all full of roses of the greatest and finest varieties. It is kept near Berlin and I understand was supplying the garden and the palaces of the emperor. It was certainly a sight to see so many acres of roses.

Now let me say, I was pleased and I watched with great interest the work of your Land Company here today, meeting some of the officers. I tell you they do deserve success, and for their own good and for the good of the town of Shiocton I hope that they will be successful in every way. It will certainly help to place Shiocton on the map, if it had not been there before, and I wish them success in every way, and I also wish you success in your proceedings here and I hope that they will be to the benefit of you all. I thank you. (Applause.)

AFTERNOON SESSION.

THE DAHLIA.

By Mr. A. P. LOEWE, Milwaukee.

In 1864 a Dutch dealer in bulbs received some Dahlia roots from Mexico, the native home of that flower. One of these roots produced a plant and flower entirely distinct from any Dahlia known at that time. It had a more slender growth, more delicate and graceful foliage than the old forms and an irregular, loose double flower, the petals being recurved at the margin so as to appear almost pointed. The color was a bright crimson,

similar to that of a garden cactus, *cereus speciosissimus*, which it also resembled somewhat in shape, and so it was called the Cactus Dahlia, botanically *Dahlia Juarezin*, in honor of President Juarez of Mexico. It was first pictured in the Gardeners Chronicle of 1879. The introduction of this new horticultural species brought about a great revival and renewed interest in Dahlia culture which had been at a standstill if not on the decline for thirty odd years.

The Dahlia had been known in Europe since 1789 when the original species, *Dahlia variabilis* of Linnaeus, was sent from Mexico by the great naturalist, Alexander von Humboldt. Of all our most important flowers it is, therefore, the last to have come into cultivation. Strange to say the flower showed some signs of doubling the very year of its introduction, probably a result of the change in climate, but no progress was made along this line until 1814. Within the 25 years following this date, however, enormous strides were made. By 1840, probably three thousand varieties had been catalogued with a range of color including every shade except sky-blue and the allied hues. The ideal sought and developed to the utmost was a very double flower, as round as a ball, on a stiff stem, and the petals perfectly regular. When this ideal had been perfected, the possibilities of the flower had been exhausted and as the singles and semi-doubles were hardly thought worth cultivating, nothing new was offered for about 39 years.

The introduction of an entirely new form was necessary to reawaken interest in the flower. The cactus dahlia filled this requirement and furnished unexcelled, almost limitless possibilities to the plant breeder, as is shown by the immense number of new varieties which have been and are still annually being brought out by seedsmen.

The modern Dahlias are, therefore, the descendants of two species and their hybrids. All Dahlias today may be classified according to Bailey into nine divisions. The oldest and the ones given the most attention by the horticultural societies at the shows are the Show and Fancy types. These two classes are the old perfectly double and regular, ball shaped flowers, differing only in color. A Show Dahlia is self colored or if tinted the edges are darker than the ground color. A Fancy Dahlia is always parti-colored, the edges always lighter than the ground color. Similar

to the above but with smaller flowers and greater numbers of them, with the plant generally more dwarfed is the Pompon type, also known as the Boquet or Lilliputian Dahlia. Then there are the Cactus and Cactus Hybrid or decorative classes. The Cactus varieties of which a Pompon form is also current, are still practically the same as when introduced except that all the colors of the Show and the Fancy type have been extended to them also. The Cactus Hybrid or Decorative means practically miscellaneous, for all kinds which do not come under the above classes are placed here, except of course the Singles and Tom Thumb kinds.

The Single Dahlias are generally divided into Standard Single and Single Cactus but some go as far as to set apart Show and Fancy Single according to the ground color and the edgings. A new form which is modified Single is the Collarette Dahlia, a single flower with a row of two small flowerets at the base of the large petals, sometimes of the same color as these, sometimes of a vividly contrasting hue. In the latter case they are very beautiful and odd.

The Tom Thumb Dahlias are very dwarf plants with an immense number of immature Show or Fancy flowers and are used mostly for bedding, though they keep well when cut.

The three classes which have recently received the most attention and have been the most prolific of new varieties are the Cactus, the Decorative and the improved Singles, such as the Twentieth Century varieties. Especially the Decorative Dahlia with their long stems, loose double flowers, and brilliant color, combined with good keeping qualities when cut, make a most desirable subject for both the gardener's and the florist's care. They are the Dahlias of the future.

PROPOGATION.

The Dahlia is a tender, tuberous rooted perennial, and the easiest and most satisfactory method of propogation for amateurs is a simple division of the roots. But there is one difficulty. The eyes or buds are not on the tubers but on the stem above them and it is necessary to secure at least one eye with each tuber. Therefore they should always be divided in spring and very often not until the tubers have been put into a warm place for a short time so as to start the buds and leave no doubt as to where they are located.

Another method employed chiefly by seedsmen and not practicable unless a greenhouse or hot bed with bottom heat is available, is by cuttings. The old roots are set in a bench in January and as the shoots grow they are removed as soon as they have three or four sets of leaves. They are trimmed and placed in a cutting bench with a bottom heat of 65 degrees, rooting there in about two weeks. This temperature causing somewhat slower rooting is preferable to a higher temperature for a shorter period, as recommended by some growers and gives better and stronger plants. When rooted the plants are potted in small pots and as soon as the weather permits are planted out of doors. By fall these cuttings will have produced what is known in the trade as field grown roots.

Dahlias as a rule produce seed quite easily but varieties do not come true so that this method of propagation is used only when new varieties are sought. Ordinarily it takes an experienced gardener to produce new varieties of the double kinds worthy of cultivation but it is an easy matter and a pleasant experience to raise the single varieties from seed, the variations and combination of colors, blotches and stripes seem inexhaustible though very few are of a sufficient grade of excellence to be named. If the seed which generally germinates easily, is sown early in doors in boxes or in a hot bed and later set into the open ground, flowers may be had the first year, though in the case of promising kinds, it is advisable to keep them another season to see them at their best.

In the case of very rare new kinds where a valuable specimen has met with an accident, grafting is sometimes employed to perpetuate the variety. That is, a slanting cut is made on the portion of the stem to be used and a similar one on the tuber, the two cut surfaces are placed together and tied with some soft pliable material. The grafts are then potted sufficiently deep to cover the union and put into a close frame. If available the terminal portion of a shoot is taken and trimmed similar to a cutting.

CULTIVATION.

In a general way the Dahlia does best in a sunny, airy location and a sandy loam with good drought resisting qualities which must, however, contain a goodly amount of plant food. Being

a strong, robust grower the plant is not very particular as to the form in which the fertilizer is applied so long as it is available. Of course the purpose for which they are set out affects their location and treatment of the plant.

Where the dwarfer kinds are planted as bedding plants, for mass effects or edging, a thorough deep shading of the soil, working in at the same time a liberal amount of horse or cow manure will generally provide all the plant food necessary. The earlier this is done in the spring the more moisture will the loosened soil absorb and the better will be its drought resisting qualities. The dwarf kinds may be planted almost anywhere under the above conditions if set quite closely and pinched repeatedly to form bushy plants, will give a profusion of small well colored flowers.

With the medium sized or tall varieties especially the heavy, large flowering kinds, protection from high winds is exceedingly important. The ground is prepared in a similar manner, though generally made richer than for the bedding kinds but the individual plants are given more room, fewer shoots are allowed to grow and for the finest specimens only a few buds are allowed to remain on the plants. The exact time for planting out dahlias is a point of contention among growers and I presume there is hardly a dahlia specialist who has not his favorite methods of dividing, pruning or pinching by which he produces his best flowers. One way to plant them out is to divide the tubers as soon as the buds are clearly discernable, placing them in the ground so that the crown of the plant is 4 to 5 inches below the surface, covering lightly at first and then filling in the ground as the shoots grow. Another method is to wait until later in the season, dividing the tubers early and allowing the shoots to grow two or three inches long and then planting them out.

The number of shoots which are allowed to remain varies also with different growers. Lawrence A. Peacock in his book, *The Dahlia*, which is probably the best and latest American treatise, advises the removal of all but the strongest shoot. He says "As soon as the shoots appear remove all but the strongest and pinch that off, forcing it to branch at the surface of the ground. Thus the entire strength of the root and soil is concentrated in the one shoot, while the pinching causes it to branch



"Bleeding Heart is one of the choicest memories of old-fashioned gardens. It is an altogether lovely plant." W. M., in Cyc. of Hort.



Sweet William, *dianthus barbatus*, an old time favorite.

at the surface, bracing it without staking and preventing all the first imperfect short stemmed flowers that appear on some varieties." The method does away with the unsightly stakes, though some of the taller kinds may need a short support if at all exposed to winds.

For nice specimen flowers, a shallow stirring of the soil as soon as it becomes hard or baked is absolutely imperative and it is far better than watering. Of course in a severe drought it will become necessary to water the plants, especially if in bloom, but as a regular practice it will not give results as good as a light stirring of the soil. The standard top dressing when the flowers begin to appear is pure bone meal and nitrate of soda, 4 parts bone to one of soda. This fertilizer on a retentive soil with an occasional heavy watering when necessary will produce the finest dahlias and plenty of them.

The Dahlia has few insect enemies but those few are hard to combat when they appear. Among them are the tarnished plant bug, which gets into the stems, the cut worm which eats off the young shoots, the black aster beetle and last but not least the grasshoppers will work havoc among the flowers if they are at all plentiful.

The Dahlia today is one of our most important flowers and is continually gaining in favor. It is pre-eminently an amateur's flower, for unlike our other floral beauties, the rose, carnation and chrysanthemum it needs no greenhouse, no winter home except a frost proof cellar, storage or pit. Once a beginning is made, with an occasional division the roots will last indefinitely. But this beginning is what has puzzled and driven many a would be dahlia grower back to bestow his efforts on other floral pets. Dahlias are offered in the trade today in four forms, five counting seeds. Of plants we have the large clumps, the field roots, pot roots and green plants. Every one is familiar with the large clumps of several years' growth which are sometimes offered. Their very size limits them to a local trade or exchange among collectors and specialists. The field clumps are the usual form in which dahlias are purchased in this country but as the demand is increasing steadily, the growers are finding it impossible to keep up, and many leading houses in the east have adopted the European plan of pot roots. When the cuttings as described above are removed from the cutting bench and potted they are

not set out into the open ground when the weather permits but are repotted into larger pots and grown thus for the whole season. The confinement of the pot causes them to produce two or three solid, round tubers $2\frac{1}{2}$ inches through. These pot roots are cheaper than field roots and are shipped for very much less. Many prominent growers have endorsed them and think them fully equal to field roots, though usually not until the second year, but as Peacock says "the roots are easily kept from year to year and the main object is to get the best varieties regardless of the form in which they are offered." Green plants are used mainly to fill vacancies or a shortage in varieties.

VARIETIES.

Now as to the varieties. With innumerable catalogs flooding the country and the larger houses offering from 200 to 500 varieties it seems futile to try to set up a small list to include the best kinds. But there are some kinds which stand out prominently for their excellence.

Of the Cactus varieties:

Aegir
Strahlen Krone
J. W. Roach
Krumhilde
Brunhilde
Niebelungen
Winsome
Hahenzollern
Countess Lonsdale
Mont Blanc
Thomas Parkin

Of the Decorative:

Black Beauty
Black Prince
Countess of Pembroke
Grand Duke Alexis
Mrs. Vanden Dael
Mrs. Roosevelt
Nymphaea
Prof. Mansfield
Pearl D'or
C. W. Bruton

Show:

A. D. Livoni
Burgundy
Pink Dandy
Storm King
Willie Garrett
Honest John
Ruby Queen

Fancy:

Frank Smith
Lottie Eckford
Penelope
Uncertainty

Mr. Loewe mentioned two or three methods of propagating the dahlia, I would like to ask him which he considers the best method.

Mr. Loewe: That all depends upon the purpose for which you want them. For an amateur wishing only a few plants, the division of the roots is certainly the best method. For a seedsman or specialist who grows a great many plants, the growing of them from cuttings is probably the best, it certainly is the quickest way of multiplying, and a great number of cuttings can be secured from a single old plant, and if repeated plantings are made, that is to say, if the shoots are broken off if they get two or three leaves, a great number can thus be secured, and I think that is the method that is employed by all the big eastern houses.

Mr. Tiplady: Don't you believe that that is the best method?

Mr. Loewe: Well, I have heard it stated this way: We grow all our other plants, take the rose, carnation, chrysanthemum, we grow all of them from cuttings when we want the best flowers; why should not we grow the dahlia the same. Now, that is a good argument. It seems to me a pretty hard thing for an amateur to grow dahlia cuttings.

Mr. Arzberger: Mr. Loewe has used the term "tuber" and "root" in his discussion of the dahlia, and I wish to ask him whether he wishes to use the term "tuber" in the scientific form, or scientific meaning, as applying to the underground portion of the dahlia.

Mr. Lowe: You will find those terms used very loosely, and I know very well the dahlia is not a tuber, but you will find that term used mostly that way by writers on that subject; I suppose it is a bit of carelessness, but I use it in the same manner, it certainly is not the technical sense that is employed there.

Mrs. Carpenter: I would like to ask the method of keeping the roots through the winter.

Mr. Loewe: If you were here this morning and heard the discussion about canna; you probably know how to keep dahlias, because, so far as my personal experience goes, it is very much the same thing. Some people can keep dahlias and others cannot. We have always stored them in a cellar with other things, pretty damp cellar, in fact, generally with apples and in the same cellar with our potatoes, and we have had fair success, the only trouble we have had is with their dry-

ing up, even in a pretty moist cellar they would shrivel up, and the buds would not grow when planted.

Mr. Smith: We used to have dahlias quite often, and quite frequently had the same success that we did with cannas. I think somebody said, throw them among your potatoes and you would not have any bother and after that we never did. Any cellar that will keep potatoes in good shape will keep dahlias, and we immediately applied that and the dahlias always come through in reasonably good shape. Of course occasionally there would be one rotted, the same as in potatoes, but ordinarily speaking, they came through in good shape.

Mrs. Howlett: Is it not reasonable to suppose that the dahlia will grow stronger from the tuber than from cuttings? I have had experience in both, but it seems to me that the tuber gives strength to the plant and grows considerably faster and larger than the cutting. If it is trimmed off, not letting too many sprouts grow from the tuber, just one shoot growing from the tuber, I think it is better. I have never grown them very extensively, but still that has been my experience.

Mr. Loewe: It seems to me it is a hard thing to compare those two methods, because the cutting should be started some time in early spring, all the way from January to March and is set out when the weather permits a live plant to be set out. I know quite a few people who set out their dormant roots two or three weeks before the danger of frost is over. Now, the difference in the time of planting, and the length of the time of growth the different plants have would make it hard to compare them, it seems to me.

THE GLADIOLUS FOR THE PEOPLE.

MR. M. CRAWFORD, Shiocton.

The gladiolus is a native of South Africa, western Asia and southern Europe. It is at home in all parts of the United States and is here to stay. It is indispensable wherever known. It is easily grown, succeeds on any soil and is not liable to the attacks of insect pests or fungus diseases. It may be planted from early spring until July, and may be had in bloom in this climate from the middle of July until freezing weather. As far south as the Ohio river it may be planted ten inches deep and left in the bed for years—until it gets too close to the surface. Every year the new bulb forms on top of the old one, so it rises about an inch annually. If a late frost cuts the young sprout to the ground it continues to grow just the same, and is not discouraged by being cut back repeatedly. If the bulb is planted wrong side up it grows about as well; and if it has to stand in water for days or endure drought for months it will make the best of its opportunities, giving an abundance of bloom. When the first few flowers open, the spike may be cut and kept in the house as well as on the plant, giving constant bloom for one or two weeks according as the weather is warm or cool. As a flower to ship it is unequaled as far as I know. We have sent it from Ohio to Montana in good condition. Many tons are shipped to the cities in the summer and fall where they are purchased by rich and poor and used for all purposes.

Fortunately this meeting is held when the gladiolus is in bloom, so I will not attempt to describe it. You can see it for yourselves and decide as to its merits. These flowers were grown in Shiocton from bulbs shipped from Ohio last spring. They were long on the way and were planted very late and in soil too wet to work to advantage. Still they bloomed. They always do.

Now a word in regard to their culture: The bulbs must not freeze at any time. They may be planted early in the spring and covered six inches. This will prevent their blowing over when in bloom. While growing the gladiolus needs the same care that other crops do. It is not well to plow under rank

manure, but it may be put on the surface after planting. Other things being equal, a bulb is valuable in proportion to its vertical diameter. A bulb which has not bloomed is roundish or conical, but a thin, watch-shaped bulb has bloomed and possibly ripened seed. A conical bulb three-fourths of an inch in diameter will produce as fine a spike as a larger one and will cost much less. Half-inch bulbs usually bloom, but they are not retailed lest the purchaser might think himself cheated.

Cutting off the spike when the first flower opens—without cutting the foliage—relieves the drain on the bulb and allows it to grow larger and thicker. Take up the bulbs in the fall, cut or break off the tops and spread where they will dry without freezing. Then they may be put in the cellar, not over four inches deep, in boxes, crates or baskets. After two or three weeks they may be cleaned—the roots and old bulbs removed. It is not best to keep them too near the furnace. The bulblets may be saved and sown in the spring like peas if one wishes to increase his stock rapidly.

We can not determine the value of a gladiolus by weight, measure or chemical analysis. When it appeals to our taste we call it beautiful and admire it although sometimes we can hardly tell why. However, there are certain characteristics that are generally conceded to be desirable, among which are the following: healthy, vigorous growth, with tough foliage not easily broken by the wind. The leaves should be ample so as to build up a large bulb, and if they grow upright without drooping so much the better. The spike should be tall and straight with ample capacity to take up water to sustain a good number of open flowers. The flowers should face one way, and be so arranged on the spike as to make a broad and compact appearance without crowding. The size is not so important, but most people prefer good sized flowers. It is very desirable that the petals be thick so as not to wilt easily.

Color is of great importance. If that be unsatisfactory all other good points that it may possess go for nothing. Whether light or dark let it be clear and pure—not muddy nor faded looking.

When a person becomes interested in the gladiolus he wants to obtain a collection of good varieties. The quickest way is to buy named sorts, for the presumption is that a name is never

given to a variety unless it possess merit. One can spend quite a sum of money in buying named sorts, but if he wants to economize he can buy seedlings for about a dollar per hundred and select from them the ones that please him best. Where two or more friends or neighbors are interested they can exchange to the advantage of both. The most satisfactory way, however, is to raise seedlings. A thousand may be grown on a square yard, and the second year they may be advanced to blooming size on a rod of ground. No two will be exactly alike, and many of them will be fine. Sow the seed as you would lettuce, about the first of May, and give some shade until the young plants appear.

DISCUSSION.

Mr. Rieck: I would like to ask what soil he prefers.

Mr. Crawford: Soil that will produce any ordinary crop is all right for growing gladiolus. I have never found any soil that was not suitable.

Mr. Rieck: If you have a good rich soil, that is, stiff clay, would it be preferable to lighten it up with a little sandy loam?

Mr. Crawford: I would rather have a sandy loam for easy working, but my varieties in Ohio have grown on clay and they grew just as well, although it is a little harder to produce them.

Mr. Rieck: Do they prefer a moist soil?

Mr. Crawford: They will endure as much drouth as anything I have ever raised.

Mr. Boynton. I would like to ask Mr. Crawford if he ever saw any soil that equalled the Shiocton soil for the raising of gladiolus?

Mr. Crawford: Never saw any soil that was nicer to work than this, but I have seen soil a thousand times that would grow just as good bulbs and flowers. The soil here in Shiocton is nice soil to work as any I ever saw.

Dr. Loope: I would like to ask Mr. Crawford a question. Looking at the variety of the gladiolus that he is growing, and the beauty of them and their excellence, whether he practices hybridization in the ordinary sense of the term, as used by growers.

Mr. Crawford: I let the humming birds do that; I raise the seed and sow it and get hundreds of different kinds, but I do not call myself a hybridizer, I have not got that far along yet. As to the fertility of the land, I have always held that a gardener should assume that the land is there as a reservoir to hold plant food, to furnish anchorage for the plant and for the cultivator to furnish that plant food, and my experience is that when you depend upon the soil to furnish the food and the anchorage both, without applying any extra plant food, you are liable to be disappointed. We ought to be content if we have nice soil to work, that is moist enough and all right, therefore we ought to be content to furnish some plant food.

Dr. Loope: I would like to have you tell the people here your idea of the question of hybridization; whether it is possible to secure so very greatly superior bulbs and flowers from hand pollination, or whatever they do, or whether you would trust to natural selection. The question of course is directed to the idea that some growers in the United States place a great deal of stress upon hybridization, whether that is better than the natural selection.

Mr. Crawford: It is very natural for some people to insinuate in some way or other that it is an advantage to buy their stock; I have seen many a person of that kind, and the thing will sell a little better if it is sold as a hybrid than it will if it is sold as a seedling; it is a little more scholarly, somehow, and it looks better, but I remember that Mr. Garland (?) of the Rural New Yorker, said that much of the seed sold as hand hybridized seed was no better than the seed that another person sold and did not claim it was hand fertilized. When Mr. Groff raised his first bedded seed, fourteen ounces the first year, he was unknown to the trade and he wanted to know if I wanted to buy it at \$1.00 an ounce. Well, of course I did, because I had been offered seed that winter at \$26 an ounce, so I bought all of Groff's hand fertilized seed, and I have always said it was a very excellent lot, but if a humming bird carries the pollen from one plant to another and it is perfectly pollinated, it is just as well as if a scientist carried it, or if the president of the United States carried it.

Mr. Moore: I would like to ask Dr. Loope, in his use of the term "hybridization" do you really mean hybridization, or cross pollination?

Dr. Loope: It is more cross pollination, of course; I am not a stickler, but the question that I wanted to get at he has answered perfectly, the idea of the people who advertise pedigree plants.

Mr. Moore: That is what I thought he meant and that you meant, cross pollination and not hybridization.

Mr. Crawford: I consider that when two species are crossed, then you produce a hybrid, but most of our varieties already have the blood of two or three species in them, and it is pretty hard to tell when you have a hybrid or simply a cross and there have been a great many hybrids produced that did not have anything that was worth anything, and we have only three or four of the species that have entered into the cultivated varieties, and the blood of these species that have not done us any good so far, the better off we are, and you can call them hybrids if you want to, at \$15 a hundred, and you can call them crossed if you sell them at \$2 a hundred.

Mr. Toole: I wish to ask, if a person wants to keep up a long season of bloom of the gladiolus, whether you recommend a succession of planting, or having early and late strains, or can we use both ideas?

Mr. Crawford: Well, we have a long succession of bloom by planting different sized bulbs. We plant our smallest stock first, and then the larger and then the largest, and the largest bulbs will bloom in 60 or 70 or 80 days, and the smaller bulbs will require ten days longer, or twenty, and the half-inch bulb will require a month more time to come into bloom, so we have a constant succession of bloom of the same variety by planting different sized bulbs at the same time, but if you are buying bulbs, it is a good plan to plant some every week right along, then you will have a succession.

Mrs. Barnes: I would like to ask how far apart he plants his gladiolus in the row, and how far apart the rows?

Mr. Crawford: For convenience in growing large bulbs, we have the rows three feet apart, so that we can cultivate them with a horse. If the stock is smaller, and we are simply growing bulbs, not flowers, we plant them very close, 100 to the foot. My rule is to plant them as far apart as the diameter of the bulb; if they are an inch in diameter, plant them two inches apart, so that there will be an inch space. Sometimes in planting little

bulblets, not larger than small cherries, I have grown them 200 to the foot. When they are two inches in diameter, plant three to the foot.

DUTCH BULBS.

MR. HENDERSON, Chicago.

The subject which has been given me comprises such a large list I have decided to confine my remarks more especially to Hyacinths and Tulips, giving to the best of my ability the history, method of culture and propagation in Holland and also a few remarks on planting in this country.

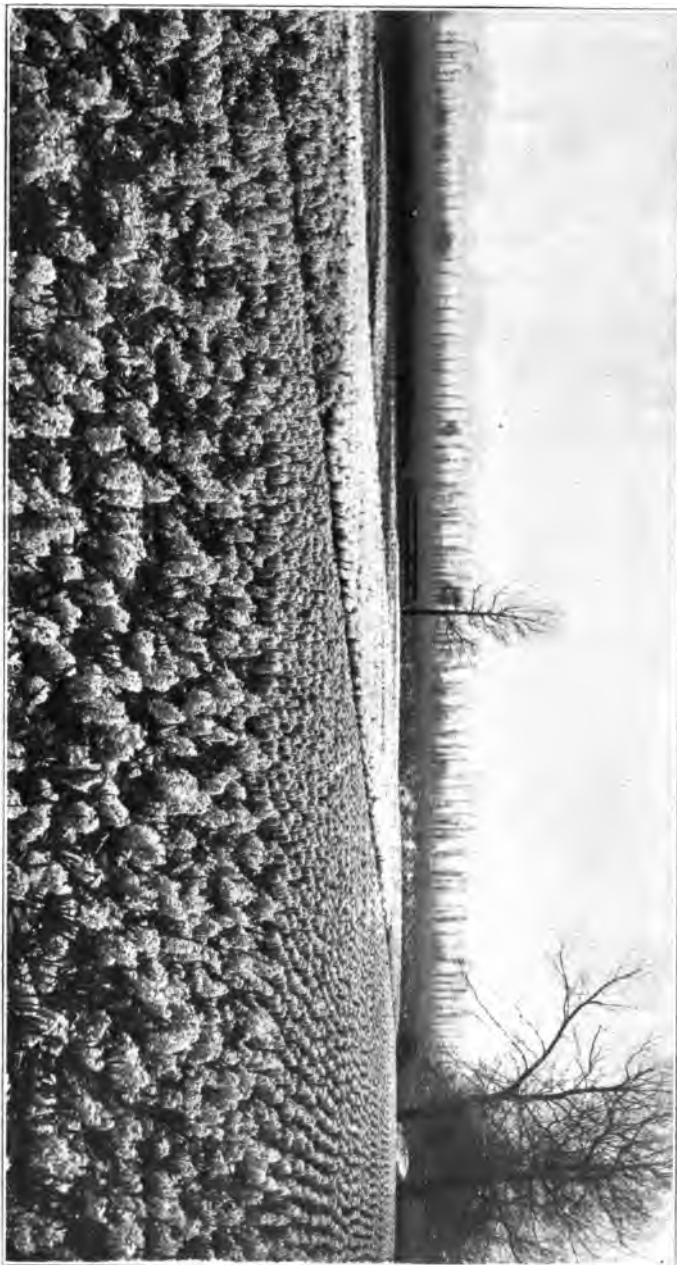
The Hyacinth or *Hyacinthus* is a genus of bulbous plant which comprises about thirty species of which three are natives of southern or tropical Africa and the rest of Asia Minor, Syria and Persia. The few cultivated species are native of the region east of the Mediterranean Sea and among them is *Hyacinthus Orientalis* which has become naturalized in southern Europe and is by far the most important. This is the variety which was introduced into Holland probably about the beginning of the 16th century; in fact about the beginning of the 18th century it stood almost first in popularity among florists' flowers, and many new varieties were produced. Then, as now, Holland, owing to its favorable climate and soil conditions was the principal Hyacinth growing country.

Tulip is a genus of bulbous herbs found wild along the northern shores of the Mediterranean in the Levant Armenia, Caucasus, Persia, Central Asia and Afghanistan. The Tulip was introduced into Holland probably about the 16th century from the Levant by way of Vienna and Venice. There is a legend that an Antwerp merchant to whom bulbs were sent cooked them for onions; and to this day the natives of some parts of Persia and Afghanistan use the bulbs of *Tulip Chrysanthia* for food.

During the 17th century the "tulipomania" was at its height and fabulous prices were being paid.

We read of the "Semper Augusta," which was sold for about

Hyacinths growing at Lisse, Holland.



\$4,500 of the "Admiral Enkheuzen," which with its offsets brought \$2,500, of the English tourist who had to pay 4,000 florins for an "Admiral von der Eyck," which he had thoughtlessly peeled with his pen knife, or of the sailor who ate with his raw herring a bulb worth ten years of his earnings, under the idea that it was an onion, and "a rather poor one at that." Those days are past. It is questionable if many florists would know a "Semper Augustus" if they saw it. All the Tulips sold in the Netherlands do not bring a fourth of the 10,000,000 guilders which a single Dutch town in those days cleared by one year's sale, and a speculator would require to make a very close "corner" in bulbs before he could hope to net the 60,000 florins which the Amsterdam speculator won by his ventures in the course of four months.

The Tulip mania died hard. As late as 1800, it is said that 15 guineas were given for a "Don Quevedo," and as late as 1835 a single "Fannie Kemble" brought at a London auction £75, while a Chelsea nursery man priced another at as high as 200 guineas, though whether he sold it is not mentioned. To the florist of today who buys his tulips at from \$10.00 to \$20.00 a thousand, the fabulous prices named seem wonderful indeed, although there are some varieties of late flowering Tulips and Narcissus which list in Dutch Catalogues at from 10 shillings to a guinea each.

Having given a few details as to the origin and history of the bulbs we will now take up the method of cultivation. While it is quite possible that these bulbs can be grown successfully in other parts of the world, there is no question that Holland is and has always been a most suitable place for their culture both in soil, climate and the fact that for generations every man, woman and child in the bulb growing district has been thoroughly acquainted with all the different methods of preparing the soil and cultivation. Holland as everyone knows is a flat country below the level of the sea and is intersected with numerous canals and ditches which in turn are pumped by windmills into the larger or main canals, these being generally from eight to ten feet above the level of the surrounding country. The bulb district does not extend over the whole country but is confined to a narrow strip along the seashore, say about one to four miles inland, in fact I am reliably informed that the best Hyacinths are raised close up to the dunes.

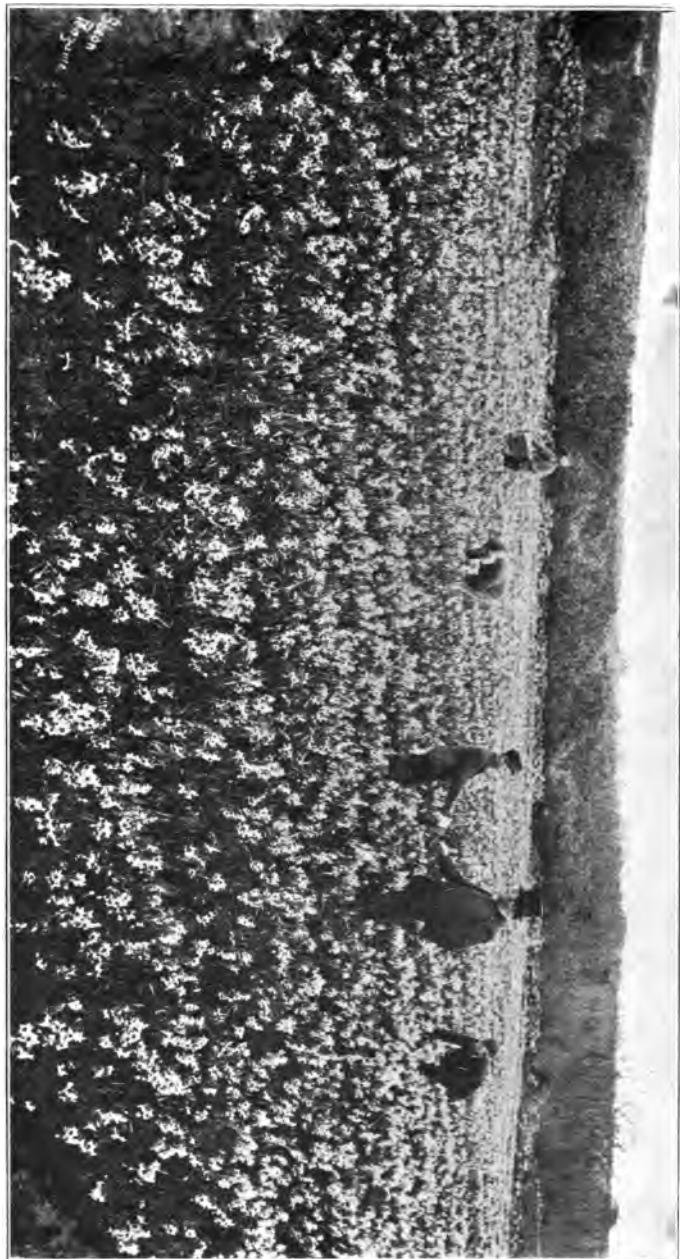
The soil in the district is practically pure sand, and the bulbs being gross feeders the ground has to be heavily fertilized and well cultivated before an attempt is made to plant. When a new patch is being put into shape it is first well trenched with the spade (by the way the spade is the only tool used by a Hollander in bulb cultivation, the plough or cultivator being an unknown article) and manure is then applied, the only fertilizer used up to the present time, being cow manure and although the price owing to the heavy demand has about doubled in recent years it will be sometime before any change is made as properly used it gives the best results. The application consists of about three wheelbarrow loads applied to every twelve square yards; this is spaded in and the following spring planted with potatoes sometimes with Anemone and Ranunculus. As soon as this crop has been harvested the ground is dug again, this time to a depth of about eighteen inches and the beds are then made for bulbs; these beds are always about $4\frac{1}{2}$ feet wide, the length being generally determined by the size of the field (these fields range from $\frac{1}{4}$ to 1 acre in extent and are nearly always surrounded with hedges which act as windbreaks). Narrow paths are dug out on each side of the bed which in turn lead into larger and deeper paths at the ends and down the center of the field. This is for convenience in planting, weeding, etc., and more especially for drainage the rainfall over there being something that one likes to talk about better than experience.

This preliminary work is done by special men who are very expert and can lay out the ground with mathematical accuracy.

The beds now being ready, planting is commenced, the date varying according to the season, but generally being about the 15th of September, Hyacinths being the first bulbs to be set out. They are planted in rows at different distances according to size of the bulbs. If first size Hyacinths are wanted (these run from 19 to 21 centimeters in size) seven bulbs are set out to the row which makes it about eight inches apart each way; if for second size (17-19 centimeter) about nine bulbs are set to the row and so on.

The depth of planting varies according to the way the land lays, if on low land shallow planting is in order and on high land the bulbs can be set deeper, the average depth being, however, about four inches below the surface. The bulb now commences

Narcissus Poeticus growing in Scilly islands for the English market.



to make roots and owing to looseness of the soil, they will often go down eight to ten inches.

As soon as the first frost has hardened the ground, a covering of reeds is put on about four inches in thickness and the work for the winter is over other than seeing that the water drains off properly. In early spring comes an anxious time for the grower as if the weather is mild top growth starts in and part of the covering of reeds has to be taken off and if a hard freeze then sets in there is a jump in the prices of Hyacinths at once. After danger of frost is over the reeds are removed and the bulbs begin to make rapid growth, coming into bloom in April. The flowers are allowed to open and show color and are then cut off, the beds are being constantly gone over to keep the weeds under control and also note any sick bulbs or those that are especially vigorous in growth which can be used for propagating purposes. Harvesting commences about first part of July and is done by hand, the bulbs being thrown into the side trenches gathered into baskets and carried to the drying sheds there the roots and tops are cut off and the bulbs put on racks to dry, the sheds being built with movable wooden screens which allow a free circulation of air or can be closed if weather is inclement.

As soon as the bulbs are thoroughly dry they are gone over again by hand and the outer skin rubbed off, leaving the bulbs in condition which they are usually received in this country. The time required for harvesting and curing takes about six to eight weeks so that the bulbs are usually ready to ship about the second week of August. After the Hyacinths have been harvested the ground is trenched again but no manure applied and it is then ready for Tulips or Narcissus, no ground being used twice in succession for the same bulb.

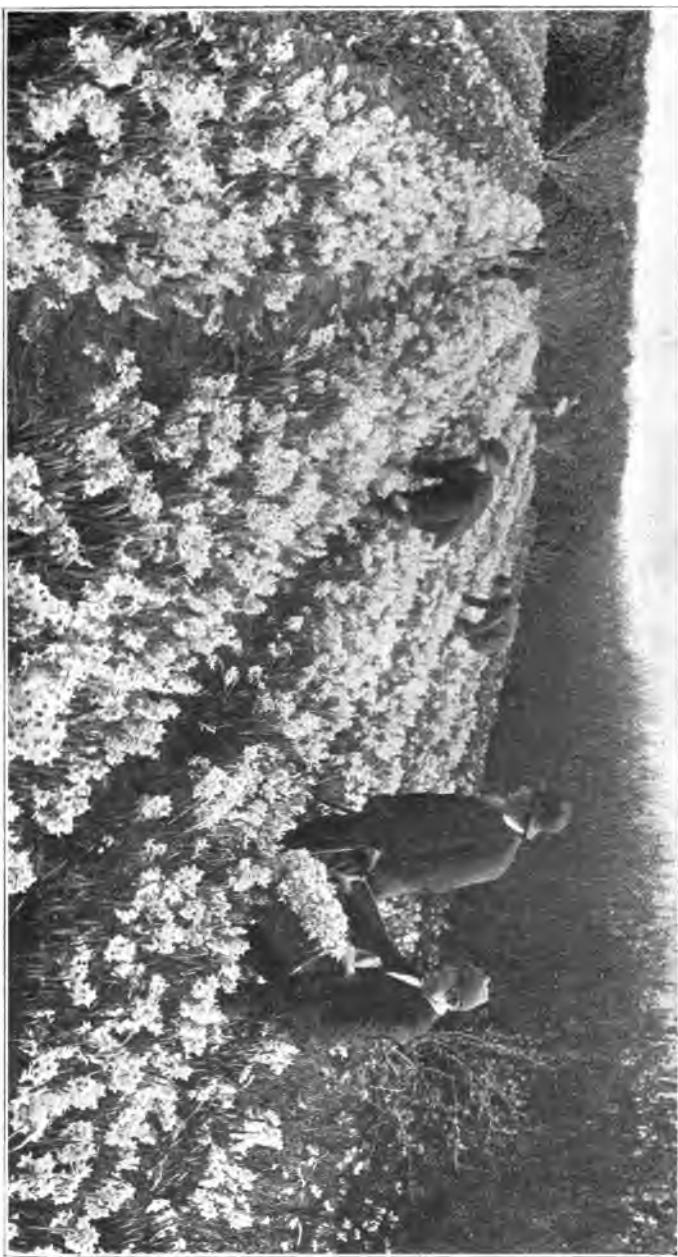
The method of culture for Tulips and Narcissus varies little from that used for Hyacinths, the Tulip being more hardy there is not so much danger of freezing in spring, the critical time being along in June when the bulbs are ripening, then if it becomes very hot the foliage is liable to turn yellow and die down which makes the bulb ripen prematurely, and affects the blooming qualities the next season. After the bulbs have been harvested the ground is given another application of manure and planted with potatoes again and after they have been harvested it is trenched to a depth of about four feet, the top soil being turned

completely under and the subsoil brought to the top. This is done to eliminate any disease that may have shown itself and is, I am told, an effectual remedy.

The propagation of the bulbs is an important and interesting subject both for the horticulturist and the botanist; and the history of the mode in which these plants are reproduced, is perhaps the most delightful phase of their life history.

They may be multiplied by seed, but this is for the most part a long and tedious process, and usually only employed in the case of raising hybrids. Too many years elapse before the bulb is mature enough for flowering, and the patience of the cultivator becomes, consequently, exhausted. The Hyacinth, for instance, demands a youthful immature career of some five or six years before it can feel energy and power, and ripeness enough to throw up a flowering spike, and when considering that this bulb, if found worthy to be grown on, requires twelve to fifteen or twenty years of careful artificial propagation before a moderate stock can be had, it is therefore necessary for some other method to be used in increasing the stock. The method of propagating the Hyacinth used to consist of making two or three cuts across the base of the bulb, after removal from the ground. When placed on the shelf to dry, it was not long before numbers of tiny young bulbs are formed at the margin of each slit. This, however, did not give the desired number of offsets and a new method has been discerned which is in general use. As soon as dug, the bulbs are taken and the base scooped out so that a large bowl-like cavity is formed, lined with the transverse surfaces of the fleshy scales. The bulbs are then put out in the field and covered with sand and left there for fourteen days (this heals the bulb up where it has been cut) after which they are taken into a shed and spread on a rack. After several days it will be found that at the surfaces of the scales inside the cavity have formed a large number of young bulbs of very small size, representing so many individual plants. These are allowed to remain there until the tissues of the parent bulb have all dried out and are then detached and sown out in the open ground. It will take six years to grow a full sized Hyacinth from such a bulblet. In following this method of propagation the Dutch have only utilized the well-known fact that when a plant or part of a plant is wounded in any part of its tissues, it immediately sets to work

Narcissus Paper White Grandiflora growing in Scilly Islands for the English cut flower market.



to heal the wound which has been made; and this is effected by renewed growth on the part of the tissues immediately adjoining the injured part, so as eventually to cover over the wound by a protective callus. If an incision be made in a detached leaf of a Begonia lying on damp soil or sand, an entire new plant or plants will be formed at the margin of the incision. This same power is possessed by bulbous plants. In the first named slicing method of Hyacinth propagation, it is the stem which is chiefly affected, hence we see here a case of adventitious budding from the stem of the same nature as the phenomenon of multiplication by means of cuttings. In the second-named method, however, that of "scooping" it is the scales, equivalent to ordinary foliage leaves, which are affected, and hence we find the same phenomenon of the production of new individuals from the leaf as in the begonia, for the tiny bulblets are formed all round the cut edges on the scales.

Tulips and Narcissus are propagated from offsets which form at the base of the parent bulb, the strongest bulbs being grown on in order to raise these offsets and are called "mother bulbs."

These mother bulbs in the case of the Tulip are planted separate and will produce the following season eight or nine bulbs or bulblets according to how prolific a variety it is. The mother bulb itself disappears as the Tulip is like the Gladiolus inasmuch as the bulb that produces the flower dies and a new bulb forms in its place, all that is left of the old bulb being the dry scales. Bulbs received are here usually in their 3rd year. The Narcissus is also propagated from offsets but the old bulb does not die as in the case of the Tulip altho' it will sometimes break up into offsets altogether and in this way become lost.

Outdoor planting of Dutch bulbs in this country is increasing every year and they certainly deserve to be more liberally planted still. In the early days of spring, as soon as the snow has left us, the first flowers to appear are such as the Snowdrop, the Crocus and the Scilla. These are followed in succession by Tulips, Hyacinths and Narcissi and remind us that winter has really ended and that the season is at hand when we may assist nature in beautifying our home grounds, parks, cemeteries and public gardens.

Where beds are to be solidly planted with spring flowering bulbs, the soil should be well prepared in the first place. A rich,

sandy loam is undoubtedly preferable, but perhaps the most essential part of all is that the beds have perfect drainage, so that there will be no danger of water standing during the winter, to rot or weaken many of the bulbs. The soil should, if not naturally sandy, have a good coating of sand and should be dug to a depth of at least fifteen inches. Well rotted cow manure is the best fertilizer that can be used, but a liberal sprinkling of fine ground bone will also be beneficial. The beds are better if raised a few inches higher than the surrounding ground. The depth at which bulbs should be planted depends mainly on the variety but a simple method is to put the bulbs down at least twice their own depth. After the first hard frost and before severe freezing weather sets in a mulching of from six to eight inches of coarse litter or leaves, covered with some fir or pine branches to prevent scattering by the winter winds, should be put over the beds. This will prevent the alternate freezing and thawing of the ground. This mulching should be removed on the appearance of spring. It is better to take it partially off at first, thus leaving a light protection until the plants appear above ground. In the hardy border, and who does not have an old-fashioned hardy border, bulbs may be planted to great advantage in patches among the hardy plants. They will not only look well and make the border look showy from earliest spring, but they have a thorough chance of ripening the bulbs and need not be disturbed from year to year for this purpose. I would recommend especially the late flowering class of Tulips such as Gesneriana, Bonton d'Or and the Darwin class.

There is another plan of planting spring flowering bulbs, which, to the lover of natural effect, is perhaps the most pleasing. This is planting in the lawn or semi-wild sod land. In many places no better effect can be gained than from large patches of Narcissus above the green sward. In a closely kept lawn only such small and early flowering varieties as Crocuses and Scillas may be planted, but what can be more pleasing in a semi-wild place than patches of the different Narcissus and in shady places the Crythroniums, Trilliums, etc. When this style of planting is adopted each variety or color should be in large patches, if space will permit, the larger the better. Nature always plants in this way.

For planting outside or in I would always recommend the use of named Hyacinths and only single varieties.

Exhibit of Dutch growers at Sassenheim, Holland, May 1901. (This and the (6) following illustrations furnished by Mr. A. Hender-
son of Vaughn's Seed Store, Chicago.)





Field of Von Sion Narcissus growing at Haarlem, Holland.



Exhibit of Dutch Growers, Sassenheim, May, 1907.

For the best list of named Hyacinths I cannot do better than give the list published recently in one of the trade papers:

Charles Dickens, beautiful pink, fine formed large spike, one of the finest pink Hyacinths.

General Pelissier, brilliant carmine, compact spike, very early. Gertrude, rosy pink, compact spike and large bulb. Being of erect habit, it is excellent for bedding.

Gigantea, fine blush pink, large compact spike. The name indicates its character, as it has a giant spike.

Roi des Belges is one of the finest scarlet Hyacinths; keeps its color longer than any other scarlet.

Lord Macauley, deep carmine pink with white eye, the brightest of the dark reds. Extra large and compact spike, a splendid Hyacinth.

Moreno, extra fine pink, very large spike and bells.

Batonee Van Thyll, pure white, large compact spike.

British Queen, pure white, grand spike.

Grandeur a Merveille, a fine blush white, very large spike.

La Grandesse, extra fine snow-white, large spike, and fine formed bells, grand flower. This is an exhibition variety which has no equal along the single white Hyacinths.

Mme. Van der Hoop, pure white, extra large bells. Very fine bedder on account of its erect habit.

Baron Van Thyll, dark bright blue, large compact spike.

Charles Dickens, dark porcelain blue.

Grand Lilas, extra fine porcelain blue, grand large spike and bells. One of the finest light blue Hyacinths.

Grand Maitre, deep porcelain blue, broad large spike and very large bulb, a grand variety.

King of the Blues, deep glossy blue, large compact spike, the finest dark blue Hyacinth in cultivation.

Lord Derby, light porcelain blue, one of the finest light blue Hyacinths, broad spike.

Queen of the Blues, light blue with silvery appearance, extra fine large spike, splendid flower.

The following are among what I would consider the best Early Tulips for bedding,—Artus, scarlet with yellow base; Belle Alliance, scarlet; Chrysolora, yellow; Duchess of Parma, red border with yellow; Cottage Maid, rose pink shaded on white; Keizerkroon, red with yellow border; La Reine, white; Joost

Von Vondel, white; Pottebakker, scarlet, white and yellow; Proserpine, carmine rose; Vermillion Brilliant, scarlet; Thomas Moore, orange; Prince of Austria, orange scarlet; Of the doubles Crown d'Or, and Imperator Rubron, sacret; Tournesol, red and yellow. In addition to the foregoing we must not forget the late flowering class which are thought by many to be the finest Tulips of all, they certainly are being more freely planted as their merits become better known, but there is still room for improvement. The following are among the best,—Gesneriana, Spatulata, major scarlet with bluish black base; Bouton d'Or, or Ida, yellow; Isabella or Shandon Bells, rose; Sweet Nancy, Golden Crown, yellow streaked red; Picotee or Maiden's Blush, white margined rose; Bizards, Bybloems, odd and interesting varieties.

I must also say an especial word for the Darwins, these I consider the finest of the late flowering class. Their stems are long and stiff, often two and one-half feet high in good garden soil, once planted in a favorable location they will come up each year for four or five years. Of these the named sorts are still rather expensive but the following can be had at reasonable prices and are certainly worth growing.

Glow, Gretchen, Salmon King, White Queen, Clara Butt.

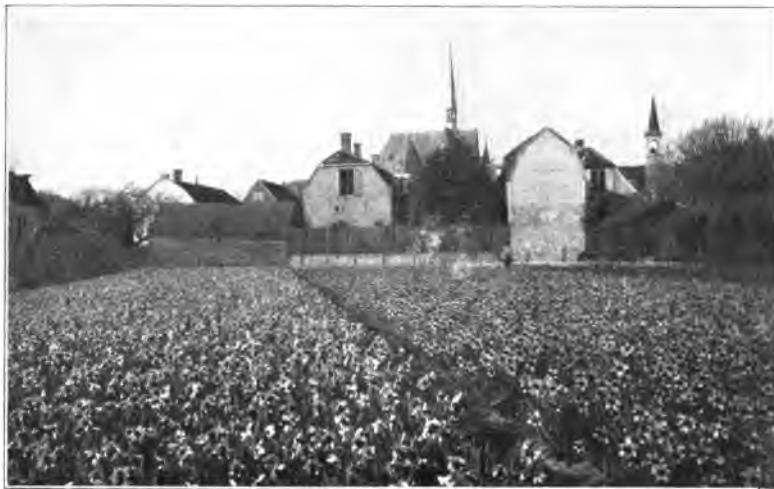
Parrot Tulips are also to be mentioned in the late flowering class of Tulips and while some objection may be raised on account of the stem being too weak to hold the flower erect, still their peculiarly toothed petals and brilliant combinations in colorings make a welcome addition to the late spring flowers.

List of Narcissus for bedding,—Yellow Trumpets—Glory of Leyden, Emperor, Henry Irving, Golden Spur, Bi-color Trumpets, Victoria, Empress, White Trumpets—Mme. DeGraff. Incomparabilis section—Sir Watkin. Double Orange Phoenix did remarkably well with us last season at Western Springs. Single Varieties, Poeticus probably the best and most satisfactory of all Narcissus for outdoor planting.

DISCUSSION.

A Member: I would like to ask if there is anything to prevent burning the leaves of tulips in June?

Mr. Henderson: That is something that occurs only in Hol-



Field of Narcissus Empress, Sassenheim, Holland.



A clump of peonies on the border of a lawn. Madison, Wis.

land, it does not hurt the flowering of the bulbs; the sun is not strong enough to hurt them here.

Mrs. Treleven: How long do you let a bed stay without taking up the bulbs?

Mr. Henderson: The ordinary early flowering I take up the bulbs every year, small bulbs and plant them separate. I know where they have been growing from year to year, but I never found where the early flowering did well, but in some soils the late flowering class will live ten years. The Darwin tulips have been known to have been in one place for ten years.

Mrs. Barnes: You say "plant them again;" at what time would you plant them, as stated in your paper?

Mr. Henderson: No, I would plant them at the same time that you plant them when you get your bulbs, from October 15 on; in digging them in the spring, wait till the leaves go down that is, if you can let the bed stand that way. The great trouble is, in order to do that, you keep your bed unsightly right into June. That is why most people give up trying to save their bulbs, fortunately for us, otherwise we would not be in business.

The President: We have a great exhibit of flowers here, and I presume a great many people are anxious to know about their premiums; I will call upon Secretary Cranefield to read at this time the premium report.

REPORT OF COMMITTEE ON AWARDS.

Your committees having examined all exhibits report the following awards.

	1st.	2nd.
Display Branching Asters.....	Eben Rexford, Mrs. Barnes	
Display Dwarf Asters.....	Mrs. D. D. Howlett, John Uecke	
Display Asters (all kinds).....	Mrs. Barnes, Eben Rexford	
Single Dahlias.....	Mrs. Barnes, Mrs. D. D. Howlett	
Double Dahlias.....	Eben Rexford, Mrs. Barnes	
Cactus Dahlias.....	Mrs. Barnes, John Uecke	
Herbaceous Perennials.....	Mrs. Barnes, — — —	

	1st.	2nd.
Perennial Phlox.....	Eben Rexford, Mrs. Barnes	
Gladiolus.....	M. Crawford, John Uecke	
Pansies.....	Mrs. Barnes, W. S. Hager	
Stocks.....	Mrs. Barnes — —	
Sweet Peas.....	Mrs. Barnes, Eben Rexford	
Single Petunias.....	Mrs. Barnes, Mrs. D. D. Howlett	
Double Petunias.....	Mrs. Barnes, — —	
Verbenas.....	Mrs. Barnes, Mrs. D. D. Howlett	
Cosmos.....	Mrs. Howlett, Mrs. H. Asmus	
Annual Garden Flowers.....	Mrs. Barnes, John Uecke	
Boquet Garden Flowers.....	Mrs. Barnes, Mrs. Howlett	

Potted Plants.

Rex Begonia.....	Mrs. H. Williams, — —
Any other Begonia.....	Mrs. E. L. Torey, Mrs. E. L. Torey
Sword Fern.....	Mrs. Geo. Jones, Mrs. E. L. Torey
Any other Fern.....	Eben Rexford, Mrs. E. L. Torey
Asparagus Plumosus.....	Mrs. L. H. McCloud, — —
Coleus.....	Mrs. E. L. Torey, — —
Sweepstakes potted Plants.....	Eben Rexford, — —

Wild Flowers.

Golden Rod.....	E. S. Hildemann, Mrs. N. A. Durkee
Asters.....	Mrs. Howlett, — —
Ornamental Wild Fruits.....	Mrs. Howlett — —
Boquet Wild Flowers.....	Mrs. H. Palmer, Mrs. Howlett
Native Fungi.....	Ray Anson, Rex Bauman
Collection Wild Flowers.....	Mrs. Howlett, — —
Sweepstakes on all exhibits.....	Mrs. Barnes, — —

Apples.

Duchess.....	W. S. Hager, E. S. Hildeman
Yellow Transparent.....	W. S. Hager, E. S. Hildeman
Whitney	— — Hager
Anisim.....	Wm. Laird, W. S. Hager

	1st.	2nd.
Red Astrachan.....	John Uecke, Wm. Toole	
McMathan.....	Toole, Alex. Laird	
Wolf River.....	Toole, Alex. Laird	
Lubsk Queen.....	Toole, _____	
Wealthy.....	Toole, _____	
Yellow Sweet.....	A. D. Brown, _____	
Lowland Raspberry.....	A. D. Brown, _____	
Saxonian.....	A. D. Brown, _____	
Plumb Cider.....	Laird, _____	
Peerless.....	Laird, _____	
Longfield.....	Laird, _____	
Utter Red.....	Laird, _____	
Fameuse.....	Laird, _____	
Pewaukee.....	Laird, _____	
Iowa Beauty.....	_____, _____	
N. W. Greening.....	Laird, _____	
Switzer.....	Hildemann, _____	
Barloff.....	Hildemann, _____	
Snyder.....	Hildemann, _____	
Beautiful Arcade.....	Hildemann, _____	

Honorable Mention.

Specimens Wis. Sandcherry.....	Irving Smith
Most Excellent Exhibit potted plants not competing.	Eben Rexford
Exhibit Gladiolus not competing.....	M. Crawford
Exhibit Bermuda Onions.....	A. I. Smith

AL. HENDERSON,
AXEL JOHNSON,
Committee on Flowers.

DR. T. E. LOOPE,
Committee on Fruits.

Dr. Loope: Before you close I would like to say a few words. I have been very much gratified at the attendance; I never saw anything like it anywhere in the State, and I think we would better come back to Shiocton again next year. (Applause.) Now, there was something brought in by some gentlemen,—I want you to understand that this is not a balloon, nor a foot ball, it is not a tulip nor a narcissus, or any of those things, nor a sweet potato, but that it is just a common sort of an onion, that is what it smells like, but what I wish to say particularly, these gentlemen are truthful people, there are two of them and they show two kinds of onions, but they are truthful men and they come up here and tell me that they can grow a thousand bushels of those on an acre and they can sell them for a dollar and a half a bushel,—\$1,500. Now you know they tell the truth, but what I particularly was anxious to say was that in this Shiocton enterprise I believe you had better put in 100 acres, that would be \$150,000. (Laughter)

“BILLS.”

W. S. HAGER.

The Secretary asked me to give a talk on bills. He did not say what kind of bills, good bills, or bad bills, bills payable or bills receivable, due bills or bank bills, bills of divorce or legislative bills. But I rather incline toward the theory that he meant the latter. At least I think that that kind was strongly impressed on his mind during the session of the legislature. At a meeting of the Executive Committee last winter it was decided to ask the legislature to increase the annual appropriation of this Society from \$4,500 to \$8,000 and I was asked to introduce such a bill which I did, February 1st, when it was read and referred to Committee on Agriculture.

March 2. Committee recommended for passage.

Yours truly was a member of that committee, perhaps that helped some.

March 4, ordered engrossed and read third time,

March 6, engrossed and referred to Committee on Third Reading.

March 7, reported correct.

March 12, referred to Committee on Claims where it lay without a hearing until about June 1st, when we got a short hearing.

About all they seemed to care to know was "What are you going to do with the money?"

June 7, reported for passage.

June 11, ordered engrossed and read third time.

June 12, reported correct and referred to Committee on Third Reading.

June 14, laid over until June 18th. June 18th passed the Assembly and sent to the Senate next day.

But why weary you with its wanderings in the Senate. Suf-
fice to say that in due course it also passed the Senate and was signed by Governor Davidson, thus making it a law and that hereafter this Society will annually receive from the treasury of the State of Wisconsin the sum of eight thousand dollars, a certain part of which must be used for experimental work.

I have told you nothing of the hitches, hindrances or tangles that we had to avoid or get out of as best we could for many were petty and all are now safely passed. But, I want to say right here now, that those who have never undertaken to get an appropriation through can scarcely appreciate the anxiety that it will give from the time of introduction until it is safely a signed law with the Secretary of State.

Furthermore, I hardly think we could have gotten it through at all if it were not for the efforts put forth by the members of the society in urging its passage upon their members of the legislature.

We also had another Bill relative to the publishing of our reports in monthly installments which ran the ordinary course until like Poor Dog Tray it got into bad company and was finally decapitated in the Executive office, the reason for which would take me too long to tell and the telling of which I am afraid without doubt would be uninteresting to you.

FORCING BULBS AND BULBS ADAPTED TO HOUSE CULTURE.

MR. EBEN REXFORD, Shiocton.

The winter forcing of bulbs is a phase of floriculture rapidly on the increase among the lovers of flowers, and I am always glad to "speak a good word" for the practice, because the attempt almost always results satisfactorily. If proper care is given potted bulbs there need be but few failures.

At the head of the list of desirable bulbs for forcing I would place *L. Harrisii*, sometimes catalogued as Bermuda Lily, but most commonly known as the Easter Lily, because it is grown so extensively for Easter decoration. This is a most noble flower when well grown, exquisite in its white purity and delightful in its fragrance. If care is taken to secure the best quality of bulbs, and they are given the right kind of treatment, few plants will fail to bloom well in the living-room. The smaller bulbs may give but one or two flowers, but they will be as perfect as those from larger bulbs. I would advise, however, the purchase of large-sized bulbs, as a plant having six, or eight, or ten blossoms is always vastly more effective for decorative purposes than the smaller ones, and it is no more trouble to grow it.

If flowers are wanted for Easter, bulbs should be procured and potted in September or October. It takes about six months to bring a plant into bloom under such conditions as ordinarily prevail in the average living-room. The ideal soil for this plant—and for nearly all bulbous plants, for that matter—is one made up of about equal parts garden loam and old, well-rotted cow-manure, with a generous amount of coarse sand worked in to insure friability. My method of planting this Lily is this: I first put into the pot about an inch of broken crockery or something similar, for drainage. Over this I place a layer of sphagnum moss to prevent the soil from washing down and closing the crevices in the drainage material. Then I put in about four inches of soil. Into this I press the bulbs, using to each pot as many as will cover the surface of the soil. This will take about four of the ordinary size to an eight or nine-inch pot. It does

not matter if they touch each other. Then I water them well, and put the pots away in a cool dark place to remain until the roots are formed. They are left there until top-growth begins, no matter how long that may be. As a general thing, however, it will be in six or seven weeks. When brought to the light, and the stalk begins to stretch up, I fill in about it with soil, and keep on doing this, as the stalk elongates until the pot is full to within an inch of its rim. This method of low potting is practiced because this, like all other Lilies, has two sets of roots, one from the base of the bulb, and another from its stalk, immediately above the bulb. By putting the bulb low in the pot we provided soil for both sets of roots to develop in, which would not be the case if the bulbs were planted near the surface.

Next to the Bermuda Lily in desirability as a winter-bloomer I would place the Narcissus, that flower

"which comes before the swallows dare,
And takes the winds of March with beauty."

We have very few flowers, if any, richer in color than such varieties as Trumpet Major, Van Scion, Empress and Horsfeldii, all in cloth of gold, or gold and creamy white, and Poeticus, or Poet's Narcissus, pure white with crimson bordered cup. These, with Paper White, a standard old sort, for forcing, enable us to brighten the windows of our homes in winter with the best representatives of a large family of plants which has enjoyed almost as much popularity as the Rose. If I were obliged to choose but one from the list mentioned, I think I would decide on Van Sion, but I would much dislike to go without the others, for all are royally beautiful, and each variety has some charming peculiarity which the others do not have.

In potting the Narcissus, I make use of seven and eight-inch pots, and crowd as many bulbs into the soil as the pot will accommodate. As a general thing, this will give you eight or nine bulbs to a pot. I find that by massing these, as well as all other bulbs, a much stronger and more satisfactory show of color is secured. One or two bulbs to a pot are good, as far as they go, but the trouble is, they don't go far enough. By the massing method one economizes space, as well as labor in caring for the plants. There are no bad effects resulting from close planting, for a soil prepared as advised above is quite rich enough to fully develop all the flowers from as many bulbs as can be crowded into a

pot. As a general thing, the Narcissus will come into bloom in about six weeks after being brought from cold storage. It will take it from six weeks to two months to form strong roots. During this period it should be left in a dark, cool place, to which it should be taken immediately after potting.

Third on the list of bulbs for winter forcing I would place the Hyacinth. The most satisfactory variety, all things considered, is the Roman. This for several reason: It is of the easiest culture, being almost sure to bloom. Each bulb will send up several flowerstalks, while the Holland varieties seldom have more than one to a bulb. Its flowers are loosely arranged along its stalks, therefore much more graceful in appearance than those of the ordinary kind. Because of this it is excellent for cutting. To secure the most satisfactory effect with it, I put as many as twelve or fifteen bulbs in earthen pans about six inches deep and fourteen inches across. This gives an almost solid mass of flowers and foliage. A pan of Roman Hyacinths in full bloom is very effective for decoration of the church or home. One does not fully appreciate the possibilities of this plant unt'l he has grown it in the manner described. Florists offer us the Romans in white, blue, pink, and yellow, but the white sorts are the only ones I would recommend, as the colors of the others are dingy, and have a faded-out look anything but pleasing.

Holland Hyacinths are easily forced. I much prefer the single kinds for the reason that their flowers look less prim and formal than the double ones, which are so thickly crowded along the stalk that all individuality is lost, a spike being just about as ornamental as some of the fearfully and wonderfully made ribbon flowers are that we see displayed in the windows of a ladies' furnishing store. This, however, is simply a matter of taste. Somebody must admire this class more than I do, for the florists force them in large quantities each season, and seem to find ready sale for them.

I have never been very successful in forcing Tulips. The early single ones bloom fairly well, but the double kinds, and the choicer varieties of the single sorts, seldom develop satisfactorily, buds form but they blight so easily that I have given up trying to grow any but the early single varieties, and these in only small quantities. The amount of care required by them yields far better results when bestowed upon any of the bulbs of which mention has already been made.

In potting Hyacinths, Narcissus, and Tulips, I simply press the bulbs down into the soil well, leaving the upper portion of them uncovered. It is always advisable to procure bulbs early in the season,—in September, if possible—and to pot them as soon as received. If some are potted at intervals of ten days or two weeks, a succession may be had which will pretty nearly cover the entire winter. Those not potted immediately should be well wrapped in paper and stored in a dark, cool place until needed. This to prevent the evaporation of the moisture stored in their scales. A bulb long exposed to light and air soon becomes flabby and wilted, and not much can be expected of it after this condition sets in.

Many persons are under the impression that it is not necessary to put potted bulbs away in a place that is dark and cool for a time after potting. But this is one of the important items to be considered. A bulb so treated will form roots without making much, if any growth of top, this latter stage of development being largely dependent on warmth and light. Unless a bulb has strong roots it lacks ability to supply the top with sufficient nourishment to bring about proper development. If we place a potted bulb in the window immediately after potting it, the influence of warmth and light stimulates it to attempt top-growth before roots have formed, or while they are forming, and the result is almost always disastrous. A period of several weeks in a place where the temperature is low, and from which all light is excluded, is one of the chief essentials of success. Very little water will be required during this period. It is well to examine your bulbs occasionally, however, and give more water if the soil seems to be getting pretty dry, but on no account give enough to make,—and keep—the soil wet. Always leave your bulbs in cold storage until they show that they are ready for active work by beginning to show a growth of leaves. Then take them to the light, but do not encourage rapid development by subjecting them to too much heat. A room where the temperature is 60 or 65° is much better for them than a warmer one. Much heat makes their growth weak, and their flowers will be short-lived.

The Amaryllis is a favorite, when grown successfully, and certainly it deserves popularity, for choice varieties of it are magnificent in form and coloring. But judging from the many complaints which come to me it disappoints the grower oftener than

it rewards his or her efforts to grow it satisfactorily. I think most failures result from an imperfect knowledge of the habits of the plant. Most persons give it about the same amount of water the year round, and thus prevent it from taking the resting-spell which it must have between each period of growth in order to do its work well. If you study the plant carefully, you will discover that it produces leaves freely for a time, and then ceases to grow. By and by there will be another production of leaves, followed by another period of inactivity. A continuous supply of water prevents the plant from becoming fully dormant between each growing period, and this is just what causes the mischief. By withholding water as soon as new leaves cease to appear, and allowing the soil to become almost dry, the plant apparently stands still for a time, but it is really preparing itself for the next growing period. Keep it in this seemingly dormant condition until new leaves,—or possibly a bud—appears. Sometimes the first indications of renewed activity will be a flower-stalk sent up from one side of the bulb, outside the last leaves produced. Then—and not till then—apply water, and make liberal use of some good fertilizer. Encourage a strong and vigorous growth by generous treatment, but, as soon as leaf-production ceases again withhold water, and let the plant rest until such a time as it shows a disposition to resume growth. By making these alternating periods of rest and growth as complete as possible in themselves, we may be reasonably certain of securing two or three crops of flowers each year from this extremely beautiful and interesting plant. Give it the same kind of soil I have advised for the other bulbs spoken of, arrange for perfect drainage, and disturb its roots as little as possible. It is very sensitive to root-disturbance, often refusing to bloom for months after repotting. If a good liquid fertilizer is used, it will not be necessary to repot oftener than once in two or three years. Remove the little bulblets or offsets which form about the old bulbs as soon as they appear, thus throwing all the strength of the plant into the three or four bulbs which a seven or eight-inch pot will accommodate comfortably.

Vallotta purpurea, sometimes known as the Scarborough Lily, is a fall-flowering variety of the Amaryllis, which the lover of really fine flowers cannot afford to be without. It increases rapidly, and a pot of it will soon have a dozen or more bulbs of

flowering size. In August or September, these bulbs will throw up flower-stalks about a foot in height, each bearing from three to five flowers of a rich vermillion. They are not as large as those of the hybrid Amaryllis, but they are brighter in color, and quite as perfect in shape, and, because of their greater quantity of flowers, they are really more useful for general decorative purposes in their season. Unlike the varieties of Amaryllis first mentioned,—which do not take kindly to the cellar—this can be stored there from November to March or April with entire safety.

The Agapanthus, Calla, Imantophyllum, and Tuberose,—all very desirable plants for amateur culture,—are generally classed in among the bulbs because their flowers resemble those of the bulb family in many respects, but neither of the four have bulbous roots. Their roots are of a fleshy, half-tuberous character. The Agapanthus has foliage something like that of the Amaryllis, though longer and narrower. It sends up a flower-stalk three or four feet tall, in summer. Its flowers are lily-shaped, each about two inches in length, of a very dainty and rare shade of blue. These flowers are borne in clusters of fifty, sixty or more, all radiating from a common center, so that a plant in full bloom seems to bear one great globular flower. The effect is very striking, and a strong plant, with several flower-stalks, is always sure to be greatly admired. It is of the easiest culture. Give it a soil of garden loam mixed with rotten manure from the cowyard, plenty of water during its growing season—which is from April to August—and store it in the cellar in November, leaving it there until March, and it will ask little else at your hands. It will live on for an indefinite period, increasing in profusion of flowers with age, and needing only an occasional shifting to a larger pot. For some reason unexplainable we seldom find it growing in home collections of plants, but it deserves a place there.

The Calla is a plant everybody admires, and almost every window garden contains a specimen of it, good, bad, and indifferent in condition, but the complaint is quite general that leaves are more plentiful than flowers. I am inclined to think that in most instances this comes about because its owner keeps it growing, or attempting to grow, the whole year round. We have very few plants that will do well under such treatment. They must

have a resting-spell sometimes during the year. This is in accord with the law of nature, and we cannot expect the plants in the window to flourish if we ignore it. If the Calla is put out of doors in June and left there until September turned down on its side, it will lose all its leaves, and one would quite naturally think it must be dead. But an examination of its thick root will soon convince you to the contrary. Repot it in a soil composed of equal parts of loam, muck, or other soil rich in vegetable matter, and old manure, give it water liberally, and in a short time it will send up great healthy leaves such as you never see on a plant kept growing the year round, and it will give you fine flowers at intervals during the season. The Calla is a very accommodating plant, and often blooms well in winter after having been kept growing all summer, if liberally supplied with liquid fertilizer. Many persons treat the plant as if it were an aquatic, and keep its roots standing in water, but I have never seen good flowers from a plant so treated. Some labor under the belief that in order to secure flowers hot water must be applied, but so far as my observation goes, the use of hot water is not only unnecessary, but positively harmful.

The *Imantophyllum*, or *Clivia*, is a plant seldom found in the collections of amateurs, but it has claims to consideration which many of the plants usually found there do not have. It bears a striking resemblance to *Vallatta purpurea* in every respect except that of the size and color of its flowers. These are nearly as large as those of the ordinary Amaryllis, and their color is a tawny red, or red showing a hint of orange. This plant, like the *Agarpanthus* and *Vallotta*, can be wintered in the cellar, though, if kept up, it often gives a crop of winter flowers.

The tuberose would have more friends than it has at present if it were hardy enough to withstand early frosts when planted in the garden. Few persons, comparatively, undertake to grow it there, because of its tenderness, therefore its merits are not generally understood. But we of the north, where frosts come early, can effect a compromise with nature in the culture of this really lovely flower, by growing it in pots. So grown, it will be found one of the most useful of fall flowering plants for the decoration of the green house and dwelling. Put two or three roots of it in seven inch pots of rich, sandy soil, in June or July, keep them well supplied with water during the summer, giving them the

full benefit of a sunny exposure, and along about September they will send up flower-stalks which will often reach a height of four feet. In October and November two feet of the upper portion of each stalk will be thickly set with a large number of white flowers with waxlike petals, resembling in texture those of the Cape Jasmine or Magnolia. The Tuberoše has a fragrance as rich and heavy as that of either of these two flowers. Some persons find it overpowering. Those who have never grown this plant for flowering in the home will find it excellently well adapted to amateur culture, and a most desirable addition to the comparatively small list of plants that bloom close to the edge of winter.

DISCUSSION.

Mrs. Howlett: Would it be necessary to dry the calla out completely to have it bloom well, or would it be better to have it grow, take care of itself, shift for itself in the garden during the summer months and not dry out completely as if turned on the sod?

Mr. Rexford: I do not know if it is necessary, but I find it saves a great deal of labor and it comes out so strongly if you pot it in rich soil, that seems to answer fully the requirements of the plant.

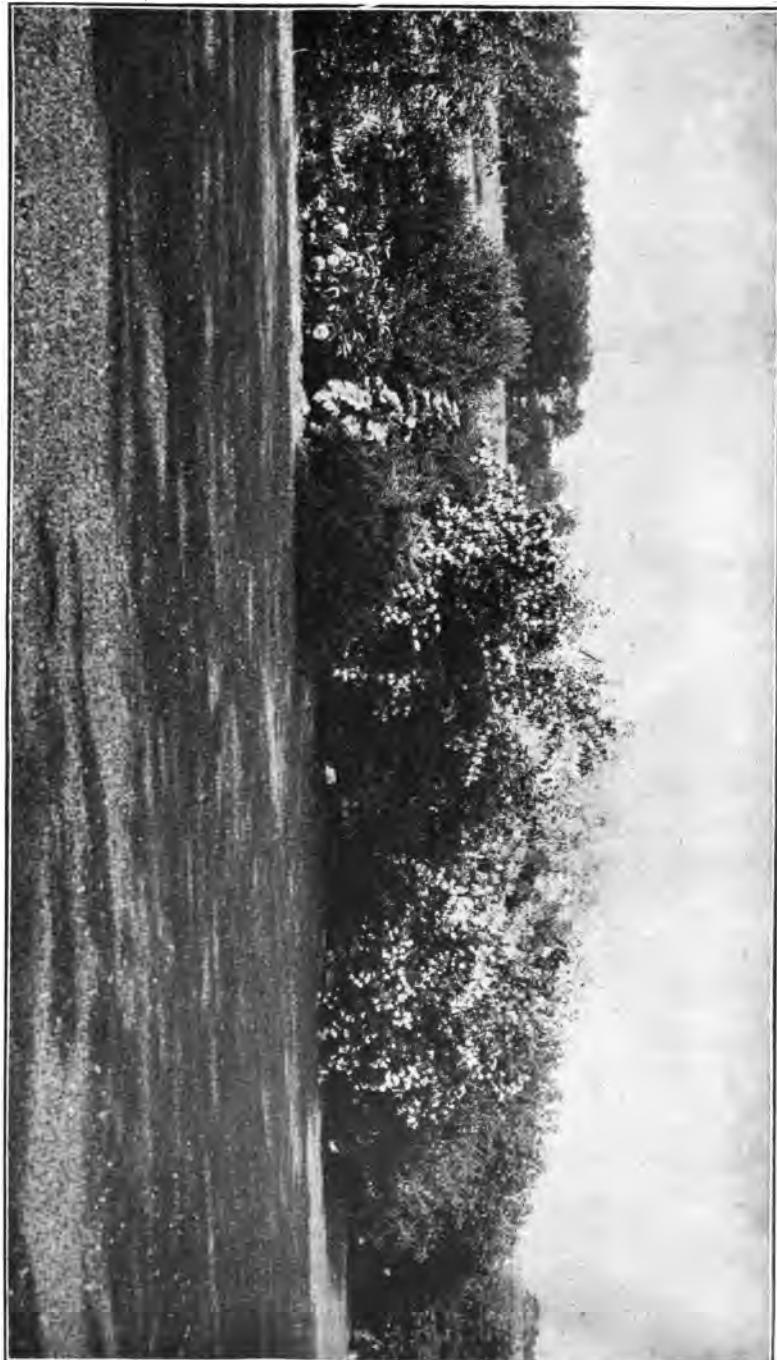
LILIES.

JOHN TIPLADY, Lake Geneva.

My subject for our information today is the "Lily," esteemed as Flora's emblem of purity yet lacking the popularity it rightly deserves, caused probably by the erroneous idea that lilies are very expensive and not entirely hardy in Wisconsin. Or it may be because lilies are largely grown in greenhouses in great quantities each year that our thoughts have been diverted from the true possibilities of the family collectively as garden flowers.

Lilies as a rule are not expensive, the standard varieties being within the reach of all who possess a patch of garden or shrub plantation and their hardiness cannot be doubted because some of the varieties listed in the catalogs such as Superbum (the Turk's cap), Tigrinum (the tiger lily) Canadense and Philadelphicum are native to our northern states.

That lilies were well known floral subjects to our ancestors for hundreds of generations is evidenced by the fact that the bible in speaking of their beauty says that "Solomon in all his glory was not arrayed like one of these." And how long has Solomon been dead? That lilies grew and were admired long before Solomon's time cannot be denied, consequently they are historic, and their origin dates back to the Garden of Eden for all we know. Back to remote antiquity to say the least. The particular variety mentioned in the bible I am led to believe was *L. Candidum* (often called "Annunciation or Madonna Lily") known to have been under cultivation in Europe in 1596. This variety seems to be the best adapted to the amateur or new beginner to force in the window or greenhouse about which I will speak later on. For beauty and ease of cultivation our native varieties as previously mentioned are worthily of consideration. Superbum of the swamps and Canadense of the fertile meadows "toil not neither do they spin" yet in their season are subjects of great beauty. The varied forms make it possible to select a variety suitable for almost any location as far as height is concerned. They may be graded from *L. Concolor*, scarcely two feet high, to the noble Himalayan lily which when established grows from 10 to 14 feet high bearing long tubular flowers of white streaked inside with purple and whilst all are beautiful anywhere they may be made doubly so when planted in masses or colonies among shrubs or herbaceous perennials. Especially are they most effective when planted thinly among *Paeonias*, the one succeeding the other in their blooming period and both seeming to enjoy the benefits derived from each other. A well prepared bed of this combination would stand undisturbed for years and would be admired by all who had the good fortune to see it. Whereas we can boast of a few very beautiful varieties indigenous to the northern states, the more highly colored and ornamental kinds such as *Auratum* and *Speciosum* and their varieties come from Japan. *L. Harrisii* (the true Eastern lily) is grown



▲ border of hardy shrubs.

largely in the Bermudas and is exported to us in large quantities for forcing purposes. So universal was this variety grown by florists for the Easter trade that the demand exceeded the possible supply and its propagation was rushed indiscriminately and to such an extent that disease attacked them and today it is a rare treat to see a good specimen of this famous variety. New kinds continue to appear, however, the last to my knowledge being *L. Philipensis* and *L. Satchuense*. If the following remarks as to outdoor culture are closely adhered to there will be little chance of failure.

The soil most suited to lilies is a deep garden loam, well pulverized and enriched with well rotted manure, should it be heavy in texture add sufficient sharp sand to lighten it up and the drainage should compare favorably with good corn land. Nothing will injure them so readily as water standing about them. In planting it is a good plan to place a handful of sand around each bulb to keep it from rotting and as October is the best time to plant, now (August) is the time to make your selections as to variety and prepare the ground, which should be thoroughly done as the bulbs do best if left undisturbed for five or six years after which time they should be lifted and divided and transplanted again in beds prepared as before. Fresh or artificial manures should be avoided. Beneficial results may be obtained by mulching during hot dry weather in summer as well as in winter and the flowers should be picked off as fast as they begin to fade as the formation of seeds tends to exhaust the bulbs. In planting they should be set from 3 to 6 inches deep according to size, the larger ones will stand deeper planting and the bulbs should not be allowed to lay around out of the ground as drying greatly weakens them. This is often the first cause of partial failure with imported stock, because they become dry in transit and most of their vitality is lost. Accept nothing but strong healthy bulbs when buying and the chance of failure will be diminished. For a beginner at out-door culture I would suggest the following kinds along with our native varieties; *Auratum*, *Candidum*, *Elegans*, *Martagon*, *Speciosum* and *Tigrinum*. After becoming proficient in the cultivation of these varieties, the following kinds may gradually be added to the collection, viz.: *Umbellatum*, *Croceum*, *Pardalinum*, *Tenuifolium*, *Wallace* and *Longiflorum*. The last named variety is the one used so extensively

by florists for forcing and is perhaps the least hardy of the above list. However, with ample protection on well drained ground it may be safely carried over winter and in the blooming season will amply repay the extra trouble taken. Thousands of cases of bulbs of this pure white lily are annually put into cold storage to retard their growth and are purchased by florists who keep up a succession of lily blooms nearly every month in the year. With regard to forcing I shall confine my remarks as much as possible to the method most suitable to amateurs rather than professional florists with an object to the cultivation of the lily in the window or small greenhouse. Upon receipt of the bulbs (which is usually about the first week in September) they should at once be placed singly in well drained 5 or 6 inch pots containing a rich compost of loam and well rotted manure. The tips of the bulbs should be just below the surface. Then place the pots close together in some shady spot on a foundation of sand or ashes to insure perfect drainage and give them a thorough watering. Sprinkle on top of the pots a thin coat of sand after which cover the whole with about 4 or 5 inches of light soil and no more attention is required unless very severe weather sets in when an additional covering of leaves or litter completes the job. Under the above conditions the bulbs should make plenty of roots (an essential feature to forcing) and by December 1st, they may be transferred to a shady window or under a green house bench. As soon as top growth commences, however, they should be given full sunlight. Fumigation with tobacco stems or an occasional syringing with soapsuds will keep them clear of green aphis and the plants will continue to thrive under ordinary conditions. Six weeks are usually required to bring the plants into full bloom from the time the buds are visible which should be about the middle of March. Bulbs thus forced are of no further value and it is a waste of time and energy to attempt to make any future use of them. Shiploads of these bulbs are annually imported from Japan and it is not unusual to hear of a single florist establishment forcing 40,000 bulbs each season.

DISCUSSION.

Mrs. Howlett: I would like to ask if any of these gigantic Himalayan lilies 12 to 14 feet high are raised in this country?

Mr. Tiplady: Yes, the Himalayan Lily, *Lilium Giganteum* has been known to exceed fourteen feet in Rochester, New York.

Mr. Loewe: I would like to have Mr. Tiplady give us a list of bulbs, with special reference to hardiness.

Mr. Tiplady: With special reference to hardiness, I would exempt from my paper *Lilium Longiflorum*, the variety used to take the place of the *L. Harrissii* for Easter; outside of that I believe the varieties mentioned in my paper will stand.

Mr. Toole: Among the varieties mentioned were *L. Auratum* and its varieties, that is, I understood that. What do you mean by its varieties?

Mr. Tiplady: There are three varieties of *Auratum*, all of which you may see carried in the leading florists' papers; it will pay you to look them up.

Mr. Toole: Can we count on the *Candidum* as being reasonably hardy, with care?

Mr. Tiplady: Yes, above all others *Candidum* suffers the least. It is a sacred name, has a sacred meaning, and it is perfectly hardy all over, as far as I know, all over the northern states of the United States, *L. Candidum* is specially recommended as hardy and satisfactory to the amateur as well as to the professional, and it is grown by the thousand. Another good thing about *L. Candidum* is that you may place several varieties in a pot and depend upon it that they will all bloom at the same time. It is strictly hardy outdoors; you do not even need to cover it with ashes. I trust you know the meaning of the word hardy.

Mrs. Barnes: May I ask a question about roses. I would like to know if the green aph's on the rose bushes at this time of year injures them, and if so, what will prevent it?

Mr. Tiplady: There is no doubt about green aphids injuring anything, they have never been known to do any good on flowers. It is easily eradicated; if you have water power, squirt it, and if you have not, use soap suds every washing day. Make a kerosene emulsion and that will kill the aphids. There is no use put-

ting tobacco on an aphis, because he won't eat it; you have got to put something onto an aphis that will penetrate his body and kill it. Kerosene emulsion will do it.

Mrs. Barnes: Bordeaux mixture?

Mr. Tiplady: No, Bordeaux mixture is a fungicide, you have to treat the aphis with an insecticide.

The President: Ivory soap suds is as good as kerosene emulsion.

Mr. Moore: I do not want a wrong impression to go out in regard to tobacco killing aphis, it will kill aphis; not by the aphis eating the tobacco, but steep some tobacco stems in water and then apply the water to the plant, it is a most efficient remedy. Another thing, you can buy at almost any florists' house decoctions of tobacco, those can be mixed at the rate given on the can and spread on the insect and it is certain death. Tobacco is positively the greatest insecticide for aphis that is used in the greenhouse, and it will work just as well out of doors.

Mr. Hager: I want to emphasize what the last gentleman said about tobacco; when everything else failed I used tobacco; take stems and steep them to get a strong solution; and whether they eat them or not, they die. You can get the tobacco stems at any tobacco dealer, they give them away.

Mr. Rexford: The florists sell extract of nicotine.

Mr. Moore: We use it in our greenhouse, we have the tobacco stems but we think the other is quicker and easier; we have a little atomizer that costs us a dollar; we use that for every kind of plant that has aphis on it.

Mr. Henderson: In using the nicotine preparation, ordinary nicotine preparation that is on the market today contains 40 per cent, it only runs 25, but a drop of it on a child's tongue will kill the child, and when you have used it, put it away carefully. Recently on Mr. Washburne's place a small boy took a bottle and tasted it and died, so if it will kill human life, it will certainly kill the bugs.

Mrs. Howlett: Would not kerosene emulsion or soap suds be better than the nicotine anyway, on account of its being a fertilizer to the rose bushes?

Mr. Moore: Unless you know how to make kerosene emulsion you run a great many chances of killing the plants.

The President: Use the soap suds.

Mr. Henderson: Ivory soap makes a good solution, and it will do the work for an amateur.

The Secretary: The members of the Executive Committee will perhaps recall that at the session at Green Bay last evening you recommended an amendment to the constitution,—I am speaking to the members of the State Horticultural Society, that is a little matter of business that must come up at this time and be disposed of. It was recommended that Article 3 of the Constitution be amended to read as follows:

Article III. Its members shall consist of annual members paying an annual fee of *fifty cents* excepting that paid members of local societies may become members on payment of an annual fee of twenty-five cents, of life members paying a fee of five dollars. Wives of such members shall be entitled to the privileges of full membership; of honorary annual members who may by vote be invited to participate in the proceedings of the society and honorary life members who shall be distinguished for merit in horticulture and kindred sciences or who shall confer any particular benefit upon the society.

A motion by Mr. Smith, that the amendment as read be adopted, was carried.

EVENING SESSION.

NATIVE WISCONSIN PLANTS BEARING BULBS AND TUBERS.

PROF. R. H. DENNISTON, University of Wisconsin.

A careful study of the herbaria and lists of Wisconsin native plants at our disposal shows a total of fifty-two species which have either bulbs or tuberous roots. Of these over one-half the number are found in four plant families; the Liliaceae or Lily family comes first in the list with ten species, followed by the

Orchidaceae with nine, the Cyperaceae, or sedges, with five, and the Compositeae with four. The remaining twenty-four species are distributed in thirteen plant families, with not more than three in any one family.

Probably the Lily family is the one best known to gardeners as a producer of bulbs. It is to this family that the tulips and hyacinths belong. Of the native plants in this order there are the Alliums, the leek, wild onion, and garlic, plants of unsavory odor and bad reputation with dairymen; the yellow and white adder's-tongue, or dog-tooth violet, the camassia or wild hyacinth, and the wild orange and wild yellow lily, plants that give a touch of bright color to meadow and woodland in mid-summer.

Nearly related to the Lily family is the Amaryllis family, and although this is so well known to horticulturists through the narcissus, amaryllis and tube-rose, I could find but one representative among our native plants, and that, the humble little Hypoxis, or yellow stargrass which grows from a solid bulb or corm.

The orchids are all of them more or less rare and little known; they are found in low bogs, and seven of the species in this list spring from corms. Among them are two species of Microstylum commonly known as the white and the green adders-mouth; two species of Liparis or twayblade, the putty-root or Adam-and-Eve, and the grass pink. The Arethusa has a bulbous root and the Pogonia, a cluster of tubers.

In the Araceae, the Jack-in-the-pulpit is one of our commonest types, and most of us are familiar with the turnip-shaped corm from which it grows. In the same family is the less-known dragon-root, with clustered corms.

The Cyperaceae, or sedges, are plants of the lowlands, and a few of them reproduce by corms or tubers. Cyperus esculentus, or yellow nut-grass, often becomes a troublesome weed in cultivated grounds.

In the Leguminosae or pea family, there are two Wisconsin plants which have tuberous roots. Psoralea esculenta, prairie-apple or Indian bread-root, has a tuberous, turnip-shaped root, and was formerly used for food by the Indians of the Northwest. Apios tuberosa, or ground nut, bears edible tubers one or two inches in length, on underground shoots. Three tuber-bearing plants are found in the Compositeae, the Jerusalem artichoke, one of the sun-flowers. *Helianthus tuberosus*, is often

cultivated for its edible tuberous roots. Other Composites are the tuberous Indian plantain, *Cacalia tuberosa*, and the white lettuce, *Prenanthes alba*, which latter bears a bitter tuberous root.

In this list of tuberous and bulbous plants it is rather difficult in some cases to decide whether or not a plant shall be included. We find such expressions in the botanies as tuberous root-stalk, and rhizomatous tuber, which show that one form merges into the other. I have omitted such doubtful cases.

The list of plants follows, with scientific and common names, classified according to plant families.

Ranunculaceae.

Anemone caroliniana—Carolina Anemone—bulb. *Anemone-ella Thalictroides*—Rue Anemone—clustered tubers.

Ranunculus bulbosus—Bulbous buttercup—bulb.

Fumariaceae.

Dicentra cucularia—Dutchman's breeches—bulbs. *Dicentra Canadensis*—Squirrel corn—grain-like tubers.

Cruciferae.

Dentaria laciniata—Cut-leaved toothwort—tuber. *Cardamine rhemoidea*—Bulbous cress—tubers. *Cardamine purpurea*—Purple cress—tubers.

Malvaceae.

Callirhoe triangulata—Poppy mallow—tuber.

Geraniaceae.

Oxalis violacea—Violet wood sorrel—scaly bulb.

Leguminosae.

Psoralea esculenta—Prairie apple—tuber. *Apios tuberosa*—Ground nut—tuber.

Umbelliferae.

Eulophus Americana—Eastern euphorb—fascicled tubers. *Erigenia bulbosa*—Harbinger of spring—tuber.

Compositae.

Helianthus tuberosus—Jerusalem artichoke—tuber. *Cacalia tuberosa*—Tuberous Indian plantain—tuber. *Prenanthes racemosa*—Smooth white lettuce—tuber. *Prenanthes alba*—White lettuce—tuber.

Labiatae.

Lycopus Virginicus—Bugle weed—tuber. *Scutellaria parvula*—Small skullcap—tuber.

Portulaccaceae.

Claytonia Virginica—Spring beauty—tuber. *Claytonia Carolina*—Carolina spring beauty—tuber.

Amaryllidaceae.

Hypoxis erecta—Star grass—corm.

Araceae.

Arisaema triphyllum—Jack-in-the-pulpit—corm. *Arisaema Dracontium*—Dragon root—clustered corms.

Alismaceae.

Alisma Plantago—Water plantain—corm. *Sagittaria variabilis*—Broad-leaved arrowhead—tuber.

Orchidaceae.

Microstylis monophyllos—White adder's mouth—corm. *Microstylis Ophioglossoides*—Green adder's mouth—corm. *Liparis lilifolia*—Large twayblade—corm. *Liparis Loeselii*—Loesel's twayblade—corm. *Calypso borealis*—Calypso—corm. *Aplectrum hiemale*—Adam-and-Eve, or putty root—corm. *Arethusa bulbosa*—Arethusa—bulb. *Calopogon pulchellus*—Grass pink—corm. *Pogonia pendula*—Nodding pogonia—clustered tubers.

Liliaceae.

Allium Schoenoprasum—Chives—bulb. *Allium cernuum*—Nodding wild onion—bulb. *Allium Canadense*—Meadow garlic—bulb. *Allium tricoccum*—Wild leek—bulb. *Erythronium Americanum*—Yellow adder's tongue—corm. *Erythronium albidum*—White adder's tongue—corm. *Camassia Fraseri*—Wild hyacinth—bulb. *Lilium Philadelphicum*—Red lily—bulb. *Lilium Canadense*—Wild yellow lily—bulb. *Zygadenus elegans*—Smooth zygadenus—bulb.

Cyperaceae.

Cyperus Schweinitzii—clustered corm. *Cyperus esculentus*—Yellow nut grass—tubers. *Cyperus strigosus*—Straw colored *Cyperus*—corm. *Cyperus rotundus*—Nut grass—corm. *Cyperus dentatus*—Toothed *Cyperus*—tuber.

Equisetaceae.

Equisetum arvense—tuber.

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

WINTER MEETING.

ANNUAL CONVENTION MADISON, FEBRUARY 4, 5, 6, 1908.

SMALL FRUIT SESSION.

WEDNESDAY MORNING, FEB. 5th.

STRAWBERRY REVIEW FOR 1906-7.

GEO. J. KELLOGG.

CULTURE, VARIETIES, VARIETIES FOR MARKET, VARIETIES FOR HOME
USE AND THE OUTLOOK FOR 1908.

This is an old subject but always new.

Culture.—To be successful the field or garden spot should be prepared two years before hand. A one year clover sod should be well manured and grow a magnificent crop of potatoes the year before planting to strawberries. After the potatoes are off the ground should be plowed early in the fall, then again just as it freezes up. Leave it as rough as possible for good

5—Hort.

ploughing; don't do as the sailor did, his oxen would not keep the furrow. "Well," he said "go where you have a mind to, its all got to be ploughed." The late ploughing is to kill the white grub. If there are many grubs do not plant it to strawberries. One year clover stubble is not apt to have the grub. Do not plant strawberries on new forest or old pasture until cropped two years. Plow again in the spring early to conserve the moisture. Then the day before planting disk it well and harrow smooth, mark 2 by 4 feet, have your plants ready and a boy to open the holes with a spade and a man on his knees with a pan of plants in an inch of water. This is the best machine to plant strawberries. A tobacco planter may do if the ground, team and weather are just right. As soon as planted start the weeder or twelve tooth cultivator, go over the whole planting every week and after every rain as long as he weeds grow and with the hoe keep out every weed in the row. The last cultivation and hoeing should be done in November just before it freezes up. If you have never hoed in November you will be surprised to find the many weeds that live over winter. Four sprayings with bordeaux, two before bloom and two after fruitage will insure healthy foliage and freedom from insects. The hedge row system will give the largest fancy berries but not as many bushels of fruit as the matted row two feet wide with the plants four inches apart from each other. The first runners are the best bearers.

Varieties.—If I could have but one kind it might be Aroma, Bederwood, Brandywine, Clyde, Glen Mary, Jessie, Klondike, Lovett, Marshall, Parson's Beauty, Splendid or Senator Dunlap; either one of these is good money for anybody, they are all perfect in blossom and if only one kind it must be perfect.

New Varieties.—Don't plant them unless you have money to burn.

Varieties for Market.—If only one, Aroma; if two Dunlap and Warfield; for long distance shipments, Brandywine and Enhance; for fancy trade, Glen Mary, Klondike, Jessie, Marshall and Sample.

For home use are fourteen I have named; but if I could have but one it would be Aroma, Bederwood, Jessie, Marshall or Brandywine, but I cannot get along with one. I want one for early, one for late, one for bushels, one for size and one for

quality. No one kind has all these good points. Try the new ones lightly.*

Crop outlook for 1908.—If you do your best for the bed on 1907 and they come through the winter without injury and we have just the right weather we will have a bumper crop; then if Michigan gets bad frosts and the south get cut off from a crop Wisconsin berries will pay big money. But let everybody else have a big crop. There it is, the man who has the best fruit and knows how to market it is the man that will *rake* in the greenbacks.

DISCUSSION.

Dr. Loope: As to the varieties, just think of that list that he read! I never saw one-tenth part of them in my life. I grow the Senator Dunlap and the Warfield and I have had other kinds, but I have not had any particular use for the former, they do not give me very many berries, and I have got down to those two kinds, and the more Warfield in them the better crop I get, and I find the Warfield cannot stand up with the Senator Dunlap when it comes to running, and if you do not take great care you get them mixed up and get a great many more Dunlap than you do Warfield, and you do not get so many berries.

Mr. E. A. Richardson: I wish to state in addition to what Mr. Kellogg said about varieties, that we raised the August Luther in Sparta for early. Some use the Bederwood and have very good success with it, but the coming early berry with us is the August Luther. It is a very attractive berry and a very good bearer and a fairly good shipper. Of course the later berries get a little small. It is something on the order of the Michel's Early, but a larger berry and a firmer and better shipper. Every nurseryman or seedsman is putting out new varieties every year and it has been said here before that unless we have money to burn, we ought not to use them all, but I think it is a good plan for us to be trying a few every year. There is nothing that is quite so fascinating in horticulture as the propagation of

*If I had room I would plant this season to try Fendall, Highland, Helen Gould, Oswego, Saratoga, Great Scott, St. Louis, Pine Apple, Repeater, Almo, Early Hathaway, Good Luck, Chesapeake, Cardinal and Kittie Rice and the big Dutchman, 4 to a quart.

new plants. I find it so with me, and it is really a joy and a very great source of pleasure for me to take the seed of strawberries and watch the new plants develop. We are all amateurs generally in that line, in Wisconsin, yet I think that every strawberry grower can find it to his profit to work along those lines. I have at present about three acres of a variety that I have tried seven years that I raised from the seed, and I thought I had something pretty good, but I concluded that it is not what we want. It is very late, it comes into bearing about the same season as the Enhance, it is a better shaped berry generally than the Enhance, with the exception of the first ones. It is also like the Enhance in that it has the green tip, but when it is ripe it is very black, when it is half ripe it is red clear through, but it is pretty late and it is inclined to be rough, so that I think I shall discard it. I got last year almost three hundred cases to the acre off the plant; that is one feature that made me hang to it longer than I should, that was the fact that it would give me quite a number of berries in the latter part of September and October. Even this year, late as our season was, we had quite a few berries on it, and later I should judge almost one quarter of a crop, of an ordinary crop, that would not get ripe at all, that was frosted. We had plenty of berries that were the size of a good sized hickory nut and the frost came and destroyed them. The methods of cultivation I think have been pretty well set forth by our friend, Mr. Kellogg and I do not think I need to add anything to that.

STRAWBERRY NOTES FOR 1907.

C. L. RICHARDSON, Chippewa Falls.

The summer of 1907 was marked by a decrease in the area planted to strawberries throughout our section. This was due partly to the extension of other lines of industry, partly to a succession of short crops and partly to causes purely local. Most fields formed very slender rows the preceding year. Add to this a cold late spring and the reason for the shortage is clearly apparent.

While our rows were thin, the individual plants therein were larger than usual and produced an abundant crop of large, highly colored berries. Southern shipments were light, only fair in quality and expensive. As the result prices were higher than at any time during the last ten years with the possible exception of 1906. Our entire crop netted us \$1.31 per case.

Our first berries were sold June 27, the latest the season has ever opened, as against June 18, 1908 and a ten year average of June 17. Our season closed July 30 as against July 10, 1906 and a ten year average of July 11. The season lasted 23 days as against 22 in 1906 and a ten year average of 24 days.

Our good crop of berries was largely, I believe, the result of a top-dressing of solid well-rotted manure that was applied to the new set bed in August, 1906. This was put on at a rate of about a ton to sixty rods of row. Then a two horse corn cultivator was run over the field twice and regular cultivation continued.

Part of this field was mulched during the fall, part in winter and part not until after the blossoms had fallen the following spring. The winter had not been severe, snow covered the ground and no difference due to early or late mulching was discernible. The rows unmulched until spring were Warfield and Dunlap, the Glen Mary, Kittie Rice and Climax need winter mulch.

When August, 1907 arrived we hired a manure spreader and applied old compact stable manure at the rate of 3,000 pounds to senventy rods of snow. A spreader is better than hand work; it tears the manure into smaller shreds, spreads it more evenly and is capable of more exact regulation.

Three years ago, we began in a small way to mulch with manure. It seemed to produce good results, both in berries and weeds, so this year we have mulched about half of our field in this manner, most of the remainder with straw and a small portion is unmulched. As the first of the winter was snowless and the ground froze and thawed during January we anticipate some injury to the unmulched portion. This part we hope to cultivate next spring until after the fruit is set and then mulch heavily with straw. The part now mulched with manure we shall try to cultivate and then mulch between the rows.

I believe there is a distinct advantage in top dressing. The fertilizer is applied not long before the time when the crop is

forming; it is applied to berry growth rather than plant growth and it is the berry not the plant that is sold. If the soil be poor and the plants unthrifty a top dressing in July or August is a wonderful stimulant.

Our plants did not grow well during the latter part of the season, due I have since decided to the hardening of the ground at a depth of three or four inches below the line of cultivation. This is a common occurrence where cultivation is shallow or insufficient. A fine tooth cultivator is all right for smoothing the surface and retaining the dust mulch, but something heavier is needed to tear up and loosen the ground to a greater depth.

We have not tested any new varieties the past year and have now gotten down to the bed rock of fourteen varieties out of perhaps one hundred and fifty that we have tried. These are the Dunlap, Warfield, Bederwood, Haverland, Johnson's Early, Marshall, Challenge, Sample, Marie, Glen Mary, Lady Garrison, Vories, Midnight and Nettie and a seedling of our own that proves to be a valuable commercial variety. The Lady Garrison and Vories we shall discard.

It will be observed that there is not an extra early variety in the list. We have tried a good many and none are satisfactory. They are small in size, soon run down smaller and none are of even average productiveness. The old Michel's Early was about as good as any. August, Luther and Camerons Early are the earliest we have ever grown. Excelsior was the most satisfactory, but after the second picking the crew dubbed them "the buckshot" and complained so vigorously at having to pick them that we have discarded this variety also. Johnson's Early is not an early at all, but a midseason variety; a wonderful plantmaker, firm and a good pollener, but the appearance of the fruit is not sufficiently attractive. For early and medium the leaders are Warfield, Dunlap, Haverland and Bederwood, while the Sample, Challenge, Marie and Midnight are very late. The former is a shy bearer and pink in color like the Hunn. Midnight is a good pollener but utterly unreliable. For the commercial grower a dozen varieties is none too many and he needs a dozen more in a small way to see if any of the new ones are valuable to him. Experiments are mighty expensive diversions but they are the only means of learning certain vital facts.

The smaller the organism the more susceptible it is to slight variations of environment. So for such a small plant as the

strawberry it is difficult or impossible outside the ranks of a few widely disseminated varieties to name those suited to the field or garden of another. The list we now carry is the result of fifteen years of experimentation, though we shall replace the Lyon and perhaps others and take on a number of experiments.

It appears that around Chippewa Falls, the acreage in strawberries has been again reduced. Fields as a rule are thin and many vacancies appear along the rows. The spring was too late, the summer too cold, the late fall and winter too dry, and not enough snow fell. With such a combination of conditions plants will be scarce, high priced and of unknown quality, while strawberries will be scarce next summer. If the growers will market carefully, export intelligently, band together and keep their nerve, prices will again be remunerative.

C. L. PEARSON, Baraboo.

The strawberry acreage at Baraboo is not as large as formerly. Those who grow strawberries by the acre may be counted upon the fingers of one hand. Some who were in the business are now growing cucumbers for Heinz, others are producing sugar beets for the Madison factory and still others will grow sweet corn for the local canning company while a few persist in "*raising cane*." So the berry grower finds less competition and a better local market.

We grow big strawberries at Baraboo which may perhaps be accounted for by the fact of our near proximity to Ringling Bros. elephant barns from which we secure fertilizer.

The strawberry crop and the length of the season were both abbreviated by the cool wet weather. There was a lively demand for the fruit in the local market even if it did require more sugar than usual.

I have nothing new in methods of culture but will emphasize the desirability of the check row system of planting so that these may be cultivated both ways with a horse, during the forepart of the growing season.

As to new varieties I haven't much to offer except more experience. Two years ago I ordered a bunch of the new kinds and perhaps because distance lends enchantment I sent to the

state of Connecticut for them. The plants came and were given good attention but they did not appear to enjoy their Wisconsin environments. They got homesick and wrapped their blankets around them and laid down to pleasant dreams. In other words they passed in their checks. I had already passed my check to Connecticut and now they have the money and I have the experience. There was one variety that survived and that is Uncle Jim. I have high hopes of him and want to hear from others about this new variety.

If I wanted about fifty of the best varieties for home use or market I take Dunlap, Warfield, B. Wood and Sample or Aroma. Take these five and multiply them by ten and you will have a better plantation than you would by a multiplicity of names.

H. C. MELCHER, Oconomowoc.

When all conditions are ideal the growing of strawberries is a pleasant and profitable occupation and we think we come as near the ideal as any place in Wisconsin.

The four principal factors in a profitable crop of strawberries are, a suitable soil, a good market, good transportation facilities, and a good man at the other end of the line to do the selling. This is a combination that can be realized by but few strawberry growing sections of our state. Our soil is a rather heavy clay and after being in the business for twenty-four years have yet to see the first crop failure or anything that would be considered poorer than a three-quarter crop. When it comes to marketing the crop we must really be considered as a suburb of Milwaukee, the first strawberry market in the state, for our transportation facilities are such that in but little more than one hour after leaving us they are in the hands of the commission man. The crop of 1907 will always be remembered as one of the most profitable ever raised. In quantity it was not the equal of some previous crops, but the price received was exceptionally good, starting in at \$2.75 per 16 quart crate and never getting below \$1.50, with the average somewhere around \$2.00.

It costs us about 70c to put a case on the Milwaukee market after growing them, this leaves \$1.30 per case, to the grower for raising the crop, which every one must concede is a good thing.

After hearing such a report as this I imagine all of you would like to come to Oconomowoc and engage in the strawberry business, but I warn you that this is the report of but a single year, and that if we take the period of the last ten years we would have to cut this profit in half and if we went back five years further than that we would have to reduce it still more, for we have had years in which the price received would not equal the cost of marketing, to say nothing of the cost of producing the crop.

We have no shippers' association or organization of any kind.

Each grower acts independently and perhaps 95% of the berries raised is sold by the much abused commission man and strange to say we are perfectly satisfied.

By the time we are ready to market our berries Michigan is the only competitor and as we can put our crop on the market in so much better condition this competition is little feared. Any one who notices the daily quotations of the Milwaukee berry market will see that Oconomowoc and Dousman berries are especially quoted and are from 30 to 50c above Michigan berries.

Nearly all of the standard varieties are grown in our locality but no combination is complete without Warfield and Dunlap. Our growers are all progressive enough to try the most promising of the new kinds and no two would agree on the same list. In my own case after having tried over sixty varieties I have narrowed down to four for commercial purposes, viz.: Warfield, Dunlap, Brandywine and Gandy, the least reliable of these being Brandywine.

When pistillate varieties are planted if they can be properly mated so that they can be picked together I prefer to have each alternate row staminate as that will insure fewer imperfect berries.

The matted row system is the only one practiced here. Heavy plant makers are planted four feet by two, shy plant makers somewhat closer.

Plants have gone into winter quarters in the best of shape and we are looking forward to a good crop for 1908.

DISCUSSION.

Prof. Taft: So far as the prospects in Michigan are concerned I will say, everything looks very well so far as the stand is concerned, but owing to the loss of the peach orchards there was a very large planting of strawberries, and that may and we hope will give us a large crop, at the same time it may tend somewhat to reduce the prices. We are growing much the same kinds as have been mentioned, the Dunlap perhaps there being most generally successful. There was mention made of the "Uncle Jim," but our friend need not have gone clear across to the Atlantic shore to get plants. It is a Michigan plant. I have been growing and watching it for ten or twelve years. It seems to do well under almost all conditions with us and is regarded generally as very valuable on our soil. You may find it in some catalogues as the "Dornan." It was sent out originally as "Uncle Jim," but it was shown at our State Society and was then named the "Dornan" for the originator, so that we have both names in the catalogues. Another variety that does well is the Pride of Michigan. This requires rather better care than the Dornan, but those who have grown it for the market think it is a very profitable sort. The Dornan I might say, while it responds to good care, will do better than most other kinds of its class under partial neglect, and perhaps for the average grower and under average conditions it would be better than the Pride of Michigan.

Mr. Hey: We are not among the largest growers, but we endeavor to grow quality and at present have about two acres of strawberries. We practice the double hedge row system. I have heard a great many people talk about the hedge row system, but when we saw their patches it was more what we called the matted row, but we practice the real hedge row system. We had some killed, however, I do not know what it was, but quite a number of our mother plants died for some reason or other and the young plants that were set were weak and a great many of them died also. Some of the berry growers down there complain of the root aphid, although that might have been the cause of those plants dying, I did not determine what the trouble was. It has been our experience with the Dunlap that it always fails to make a big crop. We are experimenting with the Little Cham-

pion, the Pride of Michigan and the New Home, and a few others we have already experimented with, but we do not find anything that really can take the place of our old tried sorts, that is, the Bederwood, Warfield and Splendid. The Splendid originated in our country down there and we think a great deal of it. We had good prices last year and expect good prices this year as a great many have quit the business.

Dr. Loope: I would like to ask Prof. Taft about that root aphid.

Prof. Taft: It has been troublesome in some sections, particularly in sandy soils and in dry seasons, but I have seen little of it in Michigan. For the last two or three years we have had quite abundant rains and as a result largely, I think, we have not had any serious trouble from that. We have had what has been spoken of as the "black root," and the plants behave about as described by the last gentleman. The stand apparently is all right for the first month or two and then the mother plants will commence to wilt and gradually die and this takes place perhaps before the runners have established themselves, so that we have oftentimes a break a number of feet in length, several plants will be missing and examining them you will find that the ends of the roots have become black and died back. This, I think, is quite unlike what they have in the Eastern States where it is of a fungous nature. It was examined by a number of experts and they were of the opinion that it was of a fungous or bacterial nature. While I could not be positive that it may not be anything in the soil, yet I am not inclined to that opinion. We find it is mostly troublesome where we have replanted within perhaps two years and where the soil is not in the best condition, where it is perhaps lacking in humus, and we are planning to make use of lime on the soils before putting out the plants, and hope, if the cause is as I have indicated, that we will be able to correct the difficulty which has been quite troublesome in some places; perhaps from the fact that the plants taken from those diseased fields, if I may use the words, and placed on other soils, have not shown the disease, I am not inclined to think it is anything contagious.

Mr. Kellogg: Do you not think it is due to winter killing?

Prof. Taft: No, because it is quite serious the first year that it is put out, we find the plants in bad shape by August, and if the weather remains dry, they get much worse by the time the

ground freezes. Two years ago I saw a large number of patches where the injury was quite serious, but I took occasion to go to other places where the plants were taken from exactly the same fields and I could find no sign whatever of the trouble, so I do not think it is of a contagious nature.

A Member: What is your theory in regard to putting on lime?

Prof. Taft: I am inclined to think there is something in the soil which seems to be counteracted in that way, and I think, being of an acid character, the lime will remove the difficulty.

Mr. Smith: I would like to ask Prof. Taft regarding the use of lime, if that same condition may occur in soil which has to all appearances an abundance of lime in it? We have been working on soil which is on an old lake, plain soil, when we go down to subsoil, there are thousands of little shells which of course at present are nothing but lime, and yet this condition exists. The water is hard, as hard as any water can be, which of course indicates lime. Will lime do any good on that soil?

Prof. Taft: I do not attempt to give this as a specific, I only said we are trying to see what it would do, hence I can not answer the question, but my impression is that it would be better to have a caustic lime, better than old shells. I do not think it is so much the actual lack of lime in the soil as it is that we want something there to counteract this acid which seems to be present.

Mr. Smith: What is the cause of the acid in the soil, an old soil?

Prof Taft: Well, I do not know what it is, I do not mean to say it is acid, and I am merely trying this to see if it will counteract the acidity. On the other hand, acidity may be due to the fact that there has been a large amount of green crop turned under, that might cause it. Oftentimes we find soils are acid where they have been worked for many years and humus taken entirely out of it, a soil then becomes acid. I have seen particularly in the Eastern States large areas of sandy loams where you could not grow clover and other crops and yet by the addition of perhaps half a ton of lime you could grow them to perfection and those soils are much like those I have seen most troubled from this disease. One thing that made me think it might be helped by the lime was, I had the pleasure a few days ago of listening to a lecture by a gentleman from the Bureau of Soils in Washington and he had a large number of specimens

and photographs of plants that they had grown, using cultures from unproductive soils, and those roots in every case looked exactly as these troubled roots I spoke of and he had other photographs and specimens of plants grown where they had used lime and they seemed entirely free from this difficulty. Those plants which he had which were affected had the ends of the roots blackened as though they had been burned off almost and by merely the addition of a thousand pounds or so of lime, per acre he had changed things so that they grew a crop in apparently perfect health.

Mr. M. S. Kellogg: I would like to ask our friend from Lookout Farm as to whether he considers that the Warfield is a better yielder than the Dunlap? I have never seen a variety that will out-yield the Dunlap, with us at least.

Dr. Loope: We have been growing the Dunlap four or five years and the Warfield alongside of it and the Dunlap raises a good, fair berry; it promises, as has been said, very great things in the spring, when it is in blossom, but you cannot get the berries that you can from the Warfield, not in my section anyway, and I believe that in all that section of the country you will find the same conditions. It may not be so in Janesville. We have a good strong soil, but there are not the berries on it, there is no use of talking.

Mr. Kellogg: I would like to ask the gentleman from Illinois who spoke about the Dunlap promising so well and failing, do you attribute that to any soil conditions, or perhaps to the fact that the plants may be too thick?

Mr. Hey: We hardly know what to attribute it to. I have heard it said that even staminate need to be fertilized and there was nothing there to help the Dunlap in that case. As far as our plants being too thick is concerned, they were not too thick in 1907, they were rather too thin, and yet I might say one-half to two-thirds of the blossoms failed. While we did have a few fine berries, the crop was not one-half up to the Warfield.

Mr. M. S. Kellogg: I would like to give a little experience of my past season's crop. I took one of our pickers this past season and in thirty minutes' time he and myself in covering probably fifty feet long of two rows of Dunlap that were grown on the matted row system, in thirty minutes we picked thirty-two quarts and that is easily one-third better than we could have

done on any other variety that we have had in the past with probably twenty-five to thirty sorts.

Mr. Wright: The Dunlap last year was a great deal like this gentleman said. I found the first two or three pickings were all nice, large berries, but they did not last. The Warfield and Lovett right alongside lasted ten days after the Dunlap was gone.

Mr. Pearson: I have found that the pistillates will out-yield the staminates, the imperfect will outyield the perfect. I do not suppose they have to expend so much energy in producing the pollen.

Mr. Wright: One thing I will say, some of us have fixed it so that the pickers will not be discriminating among the rows, that is, those that have set with the tobacco planter have planted one kind on one side of the machine, planted Warfield plants on one side and Senator Dunlap or some other variety that we set with on the other side, thus alternating and keeping the plants in the row so that the pickers cannot discriminate against rows, and also if one plant at one time is a better plant maker than the other, it has a tendency to fill the row all the way through more or less. We like that plan fairly well.

Mr. Smith: I wish to add here one remark regarding the Dunlap. We have had pretty good success with it. It is with us, I might say, still in the experimental stage, that means that we have not had it over four or five years, but it has done very well, we are very much pleased with it.

Mr. Moyle: In regard to this Dunlap matter you have been discussing, I think if you will investigate it carefully, the matter can be explained. You will find the Dunlap is a great plant maker. It has a tendency to make plants and it will throw out a little runner, stick it into the ground, the plant will hardly form before it throws out another runner and will start another plant and keep going and will form dozens of little plants and these plants, after the plant has taken root, immediately begin to form flower buds in the crown. The Dunlap is a variety that does that, it will go on making more plants and these flower buds are not as strong as they should be. The result is, when the plant blossoms in the spring, you will have a mass of Dunlap plants all over the ground and when these blossoms push up, a great many of them are too weak and immature, and that is the reason why when the Dunlap blooms, the first blossoms are the most

vigorous and they fertilize and set and form berries and the last ones are too weak and sickly and are like the lower berries on a bunch of currants. I think that explains it.

Mr. M. S. Kellogg: I will say that for several years past we have been sending Dunlap plants into the central and southern portion of the state of Illinois, not only in five thousand but twenty-five thousand lots to single growers and they are setting out these plants in their fields. They are men who have been in the business for twenty-five to thirty years, and if the Dunlap did not return them something for their labor, they would try something else.

Mr. Hanchett: I do not like to see the Dunlap trampled upon, I am glad Mr. Kellogg has stood up so faithfully for it. I have my first planting of Dunlap yet. I got my plants from Mr. Moyle some years ago and we picked our fourth crop off that Dunlap plat last season and we got one hundred cases as the crop of a quarter of an acre. It is the best crop we have raised on a quarter of an acre, and that same plat is in good condition for next year. There is one feature of the Dunlap, it will produce successive crops more than any other variety. You must be careful about getting it matted too closely. If you have fruited it and you wish to renew it for another year, why, go to work and cultivate and you will find it in fine shape next year.

Mr. Davis: I would like to know if anyone has had any experience in raising the Bubach? There are several growers west of Oshkosh that are raising it. I think it is one of the best, if not the best, for yield and quality of fruit that we have. There is but one crank that I know of that is raising the Dunlap with any success at all.

Mr. Roessler: We are down in the southern part of the state and we have raised the Bubach. It is the largest berry we have grown, but it is not a good market berry, and we have discarded it, and that has been the experience with most of our neighbors.

Mr. E. A. Richardson: The Bubach is a large, highly colored, beautiful berry and it is all right if you are near the market.

The President: We have had very good success with the Bubach. Usually it is a heavy yielder and a good market berry.

Mr. Davis: It is a home berry, it will not do to ship. We have found it is really the best berry for the home market and it is easier to take care of than any other berry that we have,

because the rows are narrow. It does not set as many plants as you need, but I think that if you look at it in one way, that it saves a great deal of time in thinning out as we have to do in the Dunlap and Warfield.

Mr. Pearson: I have grown Bubach for twenty years and whenever I want to get a box of fancy berries to give away I go to the Bubach. It is a fine berry, especially for the home market, it is not a good shipper.

Mr. Moyle: If you have a good strong soil and can get good plants to start with, the Bubach is a berry that will pay and it is a berry that will bring a fancy price on the Milwaukee and Chicago markets and you can get it in at the top price, but as stated, it has a weak plant. There is another berry that will take the place of it, that is the Bismark. It resembles the Bubach in every respect, only the berry is a little better and I think if the gentleman will try that, if he has not tested it, he will find he has a better berry than the Bubach.

Mr. Smith: I would like to ask a question regarding the Nick Ohmer. We got one beautiful crop, the finest crop of strawberries I ever saw and that was perhaps fifteen rods of the Nick Ohmer, and then failed, and I have always had a longing to get a Nick Ohmer that will do well.

Mr. M. S. Kellogg: We have tried the Nick Ohmer and we passed it up with several varieties that we have tried as not profitable as a market variety, and not reliable as a home sort.

Mr. Blackman: I have grown the Nick Ohmer, I had two years of splendid results from that, big, nice, fancy berries, and planted it again but I placed it on bottom land, on black soil and it utterly failed there. You have to have the right conditions, right weather and it is magnificent and it produces a good crop in the fall also. I discarded it on account of its being unreliable. When everything is right, it will do extremely well.

Mr. Marshall: I have not heard anything about the Lovett. I think that the Lovett is a pretty good berry, one of the best fertilizers I have.

Mr. Davis: Around Oshkosh the Lovett is grown a great deal as a perfect flower with the Warfield or with the Bubach. It has given very good satisfaction, taken the place of the old Wilson.

Mr. Richardson: I desire to protest in regard to the Bismark, I have tried it. It is an absolute, utter failure, it is

absolutely worthless. The plant is there, but when the berry season comes the berries are missing from year to year on a sandy loam.

Mr. Roessler: I would like to ask if any one has followed the double hedge row system spoken of by Mr. Hey, besides Mr. Hey, and what their success has been?

Mr. Blackman: I have tried that with the "Uncle Jim," Challenge and the Dunlap. I did not get very good results with it. I put it on very rich ground, but I got some large berries, very large, they grow to perfection, but you do not get so many berries, and I would prefer the half matted row, that is the way I grow mine and get very good results. I tried the hedge row two years and I have abandoned it altogether.

Mr. G. J. Kellogg: I have tried putting plants one right after another in the row eight or ten inches apart. That is a plan of my own, that is not a double hedge row, but I do not like that, I do not like any other plan than the half matted row, keeping the plants four to six inches apart. In regard to thinning Warfield or Dunlap in the row in August and September, if they get too thick, take a steel rake and rake out those runners that are just started and pull them off. Nick Ohmer has been a failure with me. Bubach was a failure once in four years. it was a magnificent berry when it did well.

Mr. Hanchett: In regard to the double hedge row system, I will say I tried it two years. I found the cost of taking care of the plants was about double of what it cost to keep the matted row system. The first trial on a half acre plot of Dunlap kept in the double hedge row system, we got a yield of two hundred cases to the half acre and one hundred and sixty-six of the cases were graded "Fancy" by our Fruit Growers' Association, and the rest were graded "A." In comparison with this, that same season we got a yield of about one hundred and fifty cases to the acre from the matted row system, and we got no "Fancy" from the matted row system from our Association. This would seem to indicate that the double hedge row system was very much superior to the matted row system, but this last year our results were quite different. Our hedge row system plants were badly winter killed and yielded very poorly, while our matted row system yielded very well. I did not keep the exact figures as to our hedge row system; this past season was an experiment

with varieties; we planted all the varieties which we had and a couple of rows of each variety and we found that most of the varieties planted did not respond to the hedge row system. The Dunlap and Warfield responded fairly well, but even in the case of Warfield and Dunlap this last year, they were badly frozen out, and I think that those large plants with many crowns were peculiarly susceptible to winter killing in such winters as we had a year ago. There was a coating of ice that fell early in the winter which stayed on all winter and I think that that will prove fatal to those large plants with their multiplicity of crowns in most cases.

Mr. Paulson: Is it possible to grow a cover crop on strawberry plants for winter protection?

Mr. Roessler: A neighbor of mine thought that that would be a good idea and he sowed oats between the strawberries along about in August, and he thought he would let that grow and leave it for a cover crop. As far as I could see it was just as bad to have a crop of weeds as those oats. I could not see any difference.

Mr. Richardson: We tried oats as a cover crop one year, and we were not satisfied with the results. They are a lot of trouble, they prevent cultivation late in the fall, they leave the ground in such condition that it freezes and heaves more in the winter than it does where cultivation is continued until late in the fall. It is a better plan to mulch. You can mulch just about as quickly and satisfactorily as you can get the oat crop, and then you have your berries in far better condition.

Mr. G. J. Kellogg: This cover crop with oats is a lazy man's process and yet it is very frequently successful. I have known neighbors down there in Janesville that grew acres and acres of them year after year, and sowed in their oat crop and protected them without any trouble to draw straw.

Mr. Riegel: Here is a question I would like to put in,—Wanted—Information regarding the Perfection currant, quality, hardiness, crop tendency, compared with the Victoria.

Prof. Taft: I could not say how it would do in Wisconsin, but think if you can succeed with the Wilder, you would like the Perfection. I have been watching it five or six years and have had plants for three years. They are very strong growing and fully as hardy as anything we have and seem to be very productive. The clusters are unusually long and the berries are

fully as large or larger than the Fay, and they have a very pleasant flavor, what might be called a sub-acid currant, and I think it is a very desirable kind, either for home use or market.

Mr. Blackman: I have grown Perfection, it is larger than the Fay. I cannot say as to the productiveness, I think it will equal any.

Mr. Hey: Has any one grown Pomona?

Mr. M. S. Kellogg: We have grown it in a small way, it is not equal to the Wilder in vigor and the size of the berry is a trifle under if anything. It is a good currant but it lacks vigor.

Mr. Ray: I grew the Pomona until I got the Red Cross. The Red Cross is a much better berry.

The President: Has any one had any experience with black currants?

A Member: Black Champion is the best.

Mr. Smith: I do not like to have it go into our volume without a word that we are recommending Fay's currant. Of all the fruit that has been spread about the state of Wisconsin I think the Fay's currant has been the most unqualifiedly worthless of anything that has ever been put out. (Cries of "Hear, Hear.")

Mr. Moyle: You plant the Fay currant on heavy clay soil and give it plenty of fertilization and it is equal to any of them, and I fail to find anything that will grow as large, except the Cherry, as large as the Fay currant. I have the Wilder growing and all these other varieties. They may yield more, but they are not as large in berry. It may not do well on Mr. Smith's nice mellow garden soil at Green Bay, but put it on heavy clay soil and give it hard knocks and you will find it stands all right.

Mr. Toole: A neighbor of mine favors the Fay and has grown many of them and when his are in the market there is a poor show for any other kind.

AFTERNOON SESSION.

WEDNESDAY, FEBRUARY 5.

MAKING MONEY FROM APPLES.

L. R. TAFT, Agricultural College, Mich.

Twenty years ago the people in other States had little faith in the possibilities for growing apples successfully in Wisconsin, but the exhibits that have been made at the Chicago, Buffalo and St. Louis Expositions from this State have very effectually put an end to any doubts regarding its feasibility. It is now recognized that with proper care in the selection of locations and soil, and in choosing varieties adapted to the climate, Wisconsin has some advantages over states that are famed for their production of apples.

As with other States it must be admitted that apples cannot be grown in all sections and under all conditions, and particularly when it comes to the consideration of growing this crop on a commercial scale every precaution should be taken to secure favorable conditions. With a crop whose possibilities per acre are so great it would be the height of folly to attempt its culture until every known requirement had been secured, as the failure to provide the needed natural conditions on the one hand, or to give the required care in all particulars could, even though it might seem of little importance, result in complete failure.

THE SOIL AND LOCATION.

It is true that the apple thrives under quite a wide range of soil, but all things considered it is well to choose either a moderately heavy sandy loam or a light clay loam. While the trees might grow for a few years upon the lighter sandy soils, they would not thrive as well as upon the heavier loams, and in order to get abundant crops of large fruit it will be necessary to furnish the trees with plant food at an annual expense of three to five dollars per acre, which might be saved had a heavier soil

been used. From this it is evident that it will be cheaper to pay a good price for land fairly rich in plant food than to buy a poor or worn out soil on account of its cheapness. The selection of a heavy clay soil or one that contains an excessive amount of organic matter, especially if it is of a mucky nature is for various reasons inadvisable.

Of all the requirements for an orchard perhaps the most important of all is that the soil is well drained. Even when it is possible to remove the surplus water by means of tile drains or open ditches it does not answer as well as when the nature of the soil permits it to soak away naturally. Even though the trees may make a good growth, they are seldom fruitful.

Another important requirement is that the orchard site be somewhat elevated above the surrounding country. Mere elevation alone does not suffice as if upon an elevated plateau the conditions might be little if any more favorable than upon level land at a lower level. If the land is gently rolling and so situated that both the surface water and cold air can be readily drawn off it gives an ideal location for an orchard. In such a location, not only does the elevation lessen the injury from frost, but the resulting air currents often prevent serious losses from the same cause. It is not uncommon to find dead trees in an orchard up to a certain level while in the next row and perhaps only five feet higher little or no injury has been done. And then too it is not uncommon to have a crop ruined by frost on trees where the air cannot move freely, while those located in air current suffer little or no loss. Because wet soils are low and level may account to some extent for the fact that soils that require underdraining are not as well adapted to orcharding as those which are naturally drained.

There are many points of importance to the orchardist such as the preparation of the land, age of trees, distance between the rows, varieties, heights of heads and depth of planting, but they are more or less local in their application and each person must find out what are best adapted to his conditions, and for this reason only those that are general in their nature will be considered in this paper.

PRUNING.

If there is any one thing upon which every one seems to have pronounced views, but in which the practice shows the greatest diversity, it is that of pruning, although it would seem that for a given locality what is best for one would be equally suited to others. On the contrary it is not common to find one man who thinks it is positively injurious and perhaps dangerous to the life of a tree if it is pruned at all, while his neighbor carries the pruning of his trees so far that as they reach maturity there will be only two or three branches with tufts of wiry twigs at the ends. Most orchardists will admit that these extreme methods are not correct, but the trouble is to find the happy medium.

In starting a young tree it is a good plan to remove all but about six of the larger branches, with the idea of cutting away two of these after a year or two. These should be headed back about one-half. Some persons make it a practice to go over the trees at frequent intervals during the first summer, cutting out all surplus shoots that might start and thus not only form the head of the tree into the shape desired, but throw all of the vigor into the permanent branches. Experience, however, shows that this may be a mistake, as although it may be well to cut off any water-sprouts that start below where the head is desired, and perhaps to try to balance the head if it becomes misshapen, it is not advisable to remove any of the leaf surface, as this will reduce the power of the tree to assimilate food and will not only check the growth of the branches, but what is of more importance will hinder the development of the roots and trunk of the tree, and its ability to obtain food for future growth. In the case of our orchards that have been allowed to grow beyond the reach of a spray pump and especially if, as is often the case, the branches merely have a few tufts of twigs at the ends of long bare poles, it will often result in the renewal of the tree-tops and bring everything within easy reach if the center branches are headed back. Good results can often be secured when they are cut back from one-third to one-half their length and at a point where they are six, or even eight, inches in diameter. This, of course, is very severe pruning and should not be practiced except where necessity compels. By leaving the side branches with but little pruning the check to the trees will be much less than when all the

branches are cut back, as the leaf surfaces will be sufficient to assimilate the plant food and will produce a strong vigorous growth of shoots in the center of the tree. These should be allowed to develop without much thinning out during the first season, but the following spring the surplus branches should be removed.

When trees are headed back in this way it is generally possible to secure an excellent crop of fruit from the lower branches and during the third, or perhaps the second, season after pruning, the center of the tree will begin to produce fruit.

If the condition and development of the lower branches makes it desirable, they also can be headed back at the end of two years, so that within four or five years the trees can be entirely renewed and thus not only enable the trees to produce large crops of fine fruit for many years to come, but bring the branches nearer the ground where they can be readily sprayed and the fruit gathered with much less labor.

TILLAGE VS. MULCH

Whatever the age of the trees, good results cannot be secured unless they have been able to make a reasonable growth and it is only under exceptional conditions that this can be secured when the trees are in sod and are receiving no special attention. For young orchards where the location and nature of the soil make it possible, it is desirable to keep the land cultivated. Various crops can be grown, the production of which will defray to a large extent the expenses of growing the orchard. The use of grain and similar sowed crops is not desirable, at least within four or five feet of the trees, but almost any of the so-called hoed crops which require cultivation from early spring until about the first of August can be used to advantage, although care should be taken not to have any of the hills so close to the trees as to materially interfere with their growth by robbing them of plant food and moisture.

If it is not thought best to grow hoed crops between the trees, fairly good results can be secured when the trees are young if a strip four or five feet wide either side is cultivated. The remainder of the land can be used for hay crops, although clover, alfalfa or some of the legumes will be better.

Where the land is stony or rolling so that the cultivation would not be practical, fairly good results can be secured if an area six feet in diameter about the trees is dug over and hoed occasionally during the summer.

After the trees reach a bearing age they will occupy a greater part of the ground and it is doubtful if the value of crops that can be grown between the rows will equal the increased cost of cultivation, considering the fact also that the growth of the trees will not be as good as if they have the use of the entire land. Whether the soil should be cultivated or not will depend very largely upon its condition and the growth of the trees. If they are growing rapidly, it often becomes advisable to seed the land to clover. A part or all of the crop may be taken off on the one hand, or it may be cut and allowed to remain on the land to provide humus and plant food, depending upon the condition of the soil. The orchard can be left in clover for two or three years if the growth of the trees is satisfactory, but if it becomes necessary, it can be plowed in the spring and after working it over every ten days or two weeks up to the first of July, it can be again seeded to clover.

In some cases the cultivation is confined to strips on either side of the tree rows, or in others where there is danger of winter killing of the trees, the strips along the tree rows are left in sod and the cultivating is done in the center between the rows.

In some sections mulching is used to take the place of cultivation, or perhaps supplement it in some cases. It is particularly valuable where the orchards are upon steep slopes which might be badly injured by washing if kept in cultivation, or where the land is too rough and stony to make cultivation desirable. For the purpose of mulching the trees, straw, waste, hay or any similar vegetable material might be used. This not only acts as a mulch to keep down grass and weeds, thus conserving all the moisture and plant food for the use of the trees, but it lessens the injury from deep freezing of the ground in winter and as it decays furnishes a large amount of humus and plant food for the trees. Good results should not be expected unless a sufficient amount of mulch is provided to prevent the growth of grass. It should be eight inches deep over a circle the diameter of which is at least two or three feet greater than that of the branches. Many of the failures where mulching has been tried have been due to the fact that the mulch has been packed about the trunks of

the trees or spread so thinly that it had little effect upon the growth of grass.

If the trees do not make a sufficient growth or the size of the fruit indicates that plant food is lacking, it is well to use strawy manure for a mulch, or to supplement the mulch of straw with a proper amount of manure or commercial fertilizer. Handled in this way the growth of the trees will generally equal that produced by cultivation, provided the soil is reasonably moist.

When mulching is relied upon for the orchard, the ground between the rows can generally be seeded to clover to good advantage. Especially after the trees begin to bear, it will be well to leave the crop on the ground after using what is necessary to keep up the mulch beneath the trees. Of course, if straw can be readily obtained for the mulch, and manure for supplying food, it might prove better to take off the clover or grass and feed or sell it.

It is only under exceptional conditions that a true sod mulch will give the best results in an orchard. In speaking of a sod mulch it is understood that the grass upon the land alone is used as a mulch, but if supplemented by straw or strawy manure so as to make it really a mulched orchard, better results can be secured, especially for trees that have reached a bearing age.

Under good conditions and supplying the needed amount of plant food, good results can be secured either by cultivation or mulching. Although seldom practiced so as to secure the best results, where orchards are mulched various advantages over the tillage can be secured. First, increased hardiness due to the fact that they ripen earlier in the season and because the mulch lessens the depth to which frost penetrates; second, the fruit is generally higher colored and firmer, which gives it superior keeping qualities. On the other hand, although the trees that receive the highest cultivation are more subject to the attack of fungous diseases, the mulched orchards suffer more than those cultivated from the work of insects, as the mulch forms a harboring place for them while if the land is cultivated, those which attempt to pupate in the ground will generally be destroyed. Great care must also be taken in mulching orchards to protect the trees from the attack of mice which make their nests in the mulch and feed upon the bark of the trees. This, however, can generally be prevented by banking the soil about the trunks or enclosing them in wrap-

ping or building paper, wooden veneers or wire netting. In some sections orchards also suffer seriously from fire when mulched.

SPRAYING.

Particularly in bearing orchards, if any one operation should be thoroughly performed, it should be that of spraying, by which is meant the application to the trees, at the proper intervals, of remedies for the control of destructive insects and diseases. The latter will always be found present and even greater losses are inflicted in seasons favorable to their development by various fungi which attack either the tree or the fruit.

Up to within the last twenty years the various blights, mildews and rots to which fruit is subject were ascribed to the effect of the weather, or similar causes, but it has been found that in every case they are produced by minute fungi which feed upon the tissues of the fruit or foliage and destroy them. These fungi are minute plants which develop from spores. These fall upon a leaf and in the presence of moisture germinate and reproduce. Experiments have shown that the germination of the spores can be prevented by a very small amount of copper sulphate upon the leaves and upon this is based the modern practice of spraying. The fruit grower endeavors to keep the new growth covered with a spray of copper sulphate and to repeat the application sufficiently often to keep the foliage as it develops protected and also renew it when it has been washed off by rains.

For various reasons the application is made in what is known as Bordeaux mixture consisting of about equal parts of copper sulphate and lime made into a thin wash. The first application should be made just as the blossoms are ready to open. At this time the flower stalks, the ovary and sepals can be coated, rendering them immune to the attack of the scab until after the fruit has set. At this time the small fruits are very delicate and if it happens that the weather is cold and wet and thus favorable to the development of the scab fungus, a very serious, if not entire loss of the crop may result. This was very noticeable last spring in Michigan, where the conditions were such that practically all of the fruit dropped off the unsprayed trees, while those that were thoroughly sprayed gave nearly full crops and thus the returns were sometimes equal to twenty times the cost of spraying.

It is also well to use some form of arsenic with Bordeaux mix-

ture for the destruction of leaf eating insects. It often happens that the canker worm and others of a similar nature do serious harm to the foliage at this time. The plum curculio frequently appears before the fruit has set and as it feeds upon the leaves, great numbers of them can be destroyed by this early application.

Then, a week after the fruit has set another spraying, using the same materials, should be made. At this time the apples will be erect and the calyx lobes will be open, making it possible to have some of the spray reach the inside of the calyx and thus put it where it will surely poison any of the larvae that attempt to enter the apple. Spraying at this time will also coat the small fruits with a fungicide which will do much to save the crop from injury by scab. It will also be well to repeat this application two or three weeks later both as a precaution against the scab and to help in keeping down the codding moth, the larvae of which will appear at about this time and will feed more or less upon the foliage. These three applications will ordinarily suffice for the early part of the season unless they are washed off by dashing rains, when they can be replaced, but in all sections where scab is troublesome late in the season, and particularly where injury can be expected from the codling moth, it will be necessary to spray the trees about the first of August. One application will do much good, but many think it well to repeat the spraying at the end of two weeks for winter varieties.

For the application made before the tree blossoms and immediately afterwards, it will be well to use four pounds of copper sulphate and six pounds of lime for fifty gallons of water, but this may be reduced to three pounds of copper sulphate and five pounds of lime for the later applications and many who make two sprayings in August reduce the amount to two pounds of copper sulphate and three pounds of lime. For the destruction of the leaf eating insects Paris green has most commonly been used at the rate of one pound to 100 gallons of water, or 150 gallons, according to the size and prevalence of the insects, but this is likely to burn the foliage unless an excess of lime is used and it is readily washed off besides being quite expensive at the present price. As a substitute arsenite of lime, prepared by boiling one pound of arsenic and two pounds of lime in two gallons of water for one hour and then diluting to 150 to 200 gallons, is used. This gives equally good results at one-fifth of the expense. This, however has all the faults of Paris green and, although consider-

ably more expensive, the increased efficiency of arsenate of lead has induced many to rely upon it. This is applied at the rate of two to three pounds in fifty gallons of water although some use it at the rate of one pound in fifty gallons supplementing it with about five ounces of arsenic prepared as above directed. Arsenate of lead has unusual adhesive properties and can be used at any strength without danger of burning the foliage, thus making it possible to use several times as much arsenic as in either of the other forms. Where the cost of arsenate of lead is thought to preclude its use it might perhaps be used for the last sprayings in June and in August.

SPRAYING FOR SAN JOSE SCALE.

This dreaded insect has done much harm in many of the states, but from its behavior in Michigan, I judge it is not likely to give much concern in Wisconsin except perhaps in the more southern counties, but even if it does appear, it can be readily held in check by the use of lime and sulphur solution either home made or one of the commercial brands. The treatment should be very thorough and will be found most effectual just before the buds open. While it cannot be regarded as giving as good results as Bordeaux mixture against the scab, it will be found an excellent fungicide and will also have a wonderful effect in cleaning the trees of rough bark and lichens.

While the fruit grower in Wisconsin will have conditions to meet which will not apply to the apple grower of many of the other states, on the other hand, he will have many advantages and if attention is paid to the details when locating and planting the trees to give them proper care in the way of cultivating, pruning, fertilizing, and spraying, there is no reason why the trees cannot be made even more productive and profitable.

DISCUSSION.

Mr. Richardson: I would like to ask Prof. Taft if he has used the dust spray.

Prof. Taft: I have been using various dust sprays for some fifteen years. I got an outfit I think it was 1889 or 1890 and tested it pretty thoroughly then and some seven or eight years

ago, when they commenced to take it up again, I obtained two or three different kinds of dust sprayers and tried all the different formulas that I could get hold of and bought some of the commercial mixtures, so that I had some experience with dust sprays, but I have not used them for two years, and that perhaps tells the whole story. I think the dust sprays are valuable against the plum curculio; I had very good results in keeping them down by dusting the trees and where I do not care to spray for the fungi, I would recommend the dust spray to carry an insecticide, that is, Paris green, for instance. You can put it on with very little labor and very rapidly, too, but I have never been able to control any fungous diseases and as I wish to control those and hence wish to use Bordeaux mixture, I merely put in my acetate of lead and Paris green with the Bordeaux and it gives me no extra work, whereas, to go over the trees with the dust spray would be so much extra work. I know a large number of growers at the time this was brought up six or seven years ago purchased some of these orchard outfits. I do not know of one that was used more than two years.

Dr. Loope: I would like to ask whether you consider that you can control the curculio with liquid spray.

Prof. Taft: Yes.

Dr. Loope: Absolutely?

Prof. Taft: Why, practically so, yes. In case of plums, they are perhaps worse there, the number we can save is a very large percentage, 90 per cent perhaps, and although you occasionally find one that is stung, the percentage is very small. The only thing is the thoroughness of the spray, get it on before the trees blossom, kill the beetle as it comes from the ground. The number that you can kill in larva form is very small of course. I think though, from my own experience, that the spray after the fruit has set and eggs are laid, if you do a thorough job, enough poison gets into the cup so that you can kill them, but I rely on the early spray for this insect.

Mr. Kellogg: Does not the curculio get out early enough so as to be there before the plum forms.

Prof Taft: Yes, that is the very point about spraying at that time; you kill the beetles before the plums are formed and of course before the eggs are laid. I think that is the way to do it, and the failures, I am sure, have been due to the lack of spraying at that time.

Mr. Toole: Do you spray more than once to keep clear of curculio, or is that one spray sufficient?

Prof. Taft: I like to spray all trees about four times, except perhaps the peach. I would spray, for instance, all fruit trees just before they blossom and just afterwards. With us we had a great deal of trouble from the different shot hole fungi, the different leaf blights that cause the foliage to drop from the trees in perhaps July or August and where we have sprayed those after we have gathered the cherries, or in case of the early kinds of plums, after we have picked the plums, we can hold that down very largely. In the case of late kinds of plums, those that ripen in September, we spray those about the middle of July, and can hold the foliage on; for instance, the prunes, which are the worst of all that we have in this respect.

Dr. Loope: Speaking of the plum curculio, is it the same insect as the apple curculio?

Prof. Taft: The plum curculio works on the apple and oftentimes does more harm than anything else we have because the fruits drop. Of course there are other curculios, but the same things holds true, that the spray will destroy them, and while I have seen many unsprayed trees with the ground literally covered with fallen apples in which you would find one or a dozen perhaps of curculio marks, right along in adjacent orchards where the trees have been sprayed you would find very few fallen fruits and practically no curculio. If you spray the trees just after blossoming, you can control that insect as well as anything else that is on the foliage.

Mr. Kellogg: Would not you spray before the buds start?

Prof. Taft: Well, you will find in my spraying calendar that I have that put down as one time for spraying. The point is, I want to spray once before the trees blossom; I think a spray of Bordeaux just before they blossom is the best of all, but if there is any chance of your not doing that, I would spray with the copper sulphate solution. I rather prefer the copper sulphate, for the earlier spray, just as a sort of disinfectant, cleaning up the trees, when it comes to lasting effects, when you want to cover over the new fruit and new growth, then you want to use the Bordeaux.

Mr. Kellogg: How would you make two pailfuls of Bordeaux for a common little garden?

Prof. Taft: That would be perhaps five gallons. I would

take one-tenth of four pounds, a little less than one-half pound of copper sulphate, and if I had an old wooden pail, I should put it in a little sack, let it hang in there over night and dissolve it. I would take about the same amount of lime, about one-half pound of the slaked lime, slaked with hot water. You would not succeed very well with a small amount of lime, unless you had hot water. Slake the lime, fill up the pail with water and mix the two together.

Mr. C. L. Richardson: I would like to ask the one requisite of a good spraying outfit.

Prof. Taft: Well, there are of course a number of them. I would want in the first place that it should be durable, that it would not wear out the first season and hence would want one with the working parts of brass and one that would not require too much muscle in working. There is a great difference in pumps. The pumps that have a stuffing box work harder than the others. There are two or three that are all right that have stuffing boxes, as we call them, but my idea would be to take any pump where it is down in the barrel. I would say that our growers who have from ten acres up are making use of power outfits and they certainly are getting remarkable results. I think one reason is that they are more thorough. A man who is pumping does not perhaps keep up the pressure and is in a hurry to get through and will not stop long at a tree, where if the engine is doing the work, that means that we get increased thoroughness and the increased pressure enables the mist to reach all parts of the tree.

Mr. Toole: I would like to ask what the process is in the preparation of the arsenate and lime.

Prof. Taft: There are two or three ways. I commenced making it in a small way by using one pound of white arsenic and two pounds of lime. I slaked the lime just as for Bordeaux mixture, put this in two gallons of water, one pound of arsenic and two pounds of lime and boiled it for about an hour. That contains as much arsenate as practically two pounds of Paris green.

Mr. Toole: Do you make up your arsenate of lead or buy it?

Prof. Taft: Generally buy it, it is cheaper to buy it.

A Member: I would like to ask Prof. Taft whether he considers a compressed air sprayer practical for large orchards, worked with the sprocket wheel?

Prof. Taft: Some of those work very well. I have known them to be used on the largest apple orchards thirty to forty years old. For myself I prefer not to rely on the traction outfits, except for medium sized trees, trees ten to fifteen years old.

Dr. Loope: About what pressure would you use?

Prof. Taft: One hundred pounds or thereabouts, 135 is not objectionable, but 100 is a good average pressure and with a hand pump it is pretty hard work to keep up sixty pounds.

Mr. Henry: Are the gasoline engines easier to use, or are they apt to break down?

Prof. Taft: The Michigan growers have been using them a great deal in the last three years and in our larger fruit section I think there are ten gas engines to one of every other power pressure. They keep getting them, that indicates that they like them. It is becoming more simplified and they have strengthened the weak parts so that they are certainly giving good results. I know that in Western New York they are relying largely on the gasoline outfits. If a man has no taste for machinery, I would suggest the use of the gas sprayer from the fact that all you need to do is to turn the cock and go to spraying, no machinery whatever, but they cost more than anything else. It costs about one-third of a cent for each gallon you put on for the power.

A Member: How much stronger do you have to use arsenate of lead for potato bugs than for the codling moth?

Prof. Taft: Almost double; I use about four pounds for the bugs and two for the codling moth.

Mr. Henry: Can a power potato sprayer be fixed over for a power orchard sprayer for a young orchard in Wisconsin?

Prof. Sandsten: In regard to potato sprayers used for orchards, most potato sprayers are traction sprayers and they are not well adapted for orchard spraying. We found we could not get up pressure enough to spray a tree in an orchard and I hardly see how an ordinary spraying machine used for spraying potatoes can ever be used in an orchard.

Mr. Bingham: We have a man here that has used one of those traction power sprayers on trees thirty to forty years old.

Mr. Buehler: I used one and had very good results. I would not want anything better, would not exchange it for a gasoline outfit to-day. It has not been any expense, no power, for I run it with one team, spraying all alone and I have sprayed from forty to seventy acres a season.

Prof. Taft: We have hundreds of them in Michigan and I know men that are just as enthusiastic as this man here. I know one man that got one five years ago, used it, liked it so well, got another next year, and he has trees thirty to forty years old and he likes it very much, but I know a great many others who do not like it for large trees. For trees fifteen to twenty years old they are all right. I know a man that had three or four of them that preferred them to gasoline engines, but the majority do not like them for very large trees.

Prof. Moore: Talking about spraying for the San Jose scale and about San Jose scale being found in Wisconsin, we had a report that there was San Jose scale in Outagamie county this summer. I took occasion to go there and found that it was oyster-shell bark louse. So far as we know there is no scale in the orchards, although we do run across it sometimes in the nurseries.

COMMERCIAL ORCHARD SESSION.

THE OUTLOOK IN THE EXTREME NORTH.

Wm. KNIGHT, Bayfield.

I wish to say to this convention that I am not an expert fruit grower in any sense, and cannot be classed with you skilled and scientific men in that line, to whom the world owes a larger debt than they will ever pay.

I am here from Bayfield Co. representing an unknown land, a district (except to its citizens) so little known, and its natural conditions of soil and climate so different from that non-residents expect we should have, that it is a difficult matter to have them take us at all seriously when we explain to them our prospects and possibilities in the fruit line. They have been so accustomed to hear of Lake Superior, only in connection with cold weather, snow and ice, that they cannot comprehend how it is possible to grow fruit so far north, and until you get on the ground and see the trees and fruit, you still retain a skeptical mind, no matter what others may say. I want to definitely get before you the district that I am speaking of. It is a strip of

territory starting about five miles south of the town of Bayfield, reaching back from three to five miles from the lake and extending west along the coast line about forty miles, also all the Apostle Islands. There are twenty-two of these islands, and each island has from three hundred to five thousand acres, so you see the territory I have set off, comprises a large amount of land, and is known locally as the Bayfield peninsula and Apostle Islands, nicknamed the banana belt of Lake Superior.

This district that I have designated has been pretty well tested in growing apples, cherries and all small fruits and berries, for thirty years or more.

Now I do not say that this is the only land in Bayfield county that would produce fruit. The whole county might be good fruit lands for all we know, but I say I do not know, and we have knowledge and reasons for believing it would not be. Certainly these outside lands would not be the success that the Bayfield Peninsula would be.

It has been long noticed that our best apple orchards in northern latitudes were only made possible from the influence of large bodies of water, and were it not for the influence of our deep water lake we would not be able to grow much fruit.

There are so many things to be reckoned with and woven into the fabric pertaining to the commercial orchard that I shall content myself by giving you an outline of the facts and conditions as I see them after thirty-seven years observation of that country and you must judge for yourself whether a commercial orchard would be a success.

The climate would be a revelation to some people, especially the winters, in the thirty-seven years of my experience on the Bayfield peninsula, I never knew the thermometer but once to get as low as thirty-two degrees below zero. In ordinary winters, the temperature will not reach lower than twenty-five degrees below, more than once or twice during the winter. The greater portion of winter is vibrating from twenty degrees above to ten below. So far as even temperature is concerned, we can beat the southern portion of the state by long odds. In fall when we get winter weather, it stays winter until spring. Same way with snow, it comes in fall and stays until spring and the ground never freezes. Occasionally we will have a winter with little snow then the ground freezes some, but not deep, as there is always snow enough to protect the ground some.

You might ask what causes this mild even temperature so far north and those conditions do not obtain every where on Lake Superior. If you will take the map, you will observe that there is but one wind that can blow on that peninsula, but must first travel from twenty-five to three hundred miles over water before it strikes these lands.

Lake Superior is a deep water lake, and outside of the islands never freezes, and tempers every wind that blows except a south west wind. Winds off the lake are our warmest winds in the winter, and the coolest winds in the summer. So you see our fruit trees are getting the benefit of that lake both winter and summer.

Our winters break suddenly in the spring months, and summer is upon us, and in a few weeks the trees are in leaf and everything growing.

Ordinarily it is not necessary to mulch strawberries as the snow protects them sufficiently. In fact, the growers of strawberries never mulch, and they never have a failure.

The soil of the peninsula is mostly sand and clay, mixed with gravel and stone. It is a moderately strong soil and a warm one, and appears to be the best soil for all kinds of fruits and berries, and produces high colored, firm and well flavored fruit.

Our apples lead any district in the state, for firmness, flavor, high color and keeping qualities. Yellow transparents will keep from two to three weeks. Duchess until the middle of December, Wealthy until January, and Wolf River until April, all this without cold storage and in an ordinary cellar.

Cherries are a sure crop, tree does well and bears abundantly. To my knowledge we have lost but one cherry crop in fifteen years. We have a cherry up in that country that has been grown for the last fifty years, how much longer no one knows, possibly a hundred years. That cherry was introduced on Madeline Island by the Jesuits or the fur traders. As far as history goes it was allowed to grow and reproduce itself by throwing up root sprouts. They were never cultivated and the fruit has never deteriorated in color, size or flavor. It has all the appearances of the Early Richmond, but is two weeks later in ripening, and will hang on the tree two weeks after ripe. The tree is a hardier tree than the Richmond, perhaps this would be a valuable tree in some districts, where other cherries fail.

Now as to the smaller fruits and berries, such as strawberries

raspberries, blackberries, currants and gooseberries, we stand ready to compete with any section in the State as to quantity and quality.

The first discoveries of these fruit lands in Bayfield County was made about forty years ago by a lighthouse keeper and a real estate man. The lighthouse keeper to show his faith established a nursery on Michigan Island, fifteen miles from the main land. And there is evidence of that Old Nursery yet, apples, pears, cherries and plums are struggling away in the brambles, and produce some fruit. The real estate man got busy and got out a map showing the Apostle Islands and Bayfield county, and headed it in large letters "THE FRUIT FIELDS OF THE NORTHWEST." Both men were progressive men, but they were fifty years ahead of the procession. About that time the lumberman appeared on the scene. Well you all know how a lumberman likes to farm, he reaps but never sows. Of course the nursery went to brambles and the land agent took the lumberman's cue and wiped off the legend from his map, "The fruit fields of the Northwest." And to the world they have been unknown since. Our production of all fruit has been in a small, careless hayhazard way, by men that grew for their own consumption only. A few of course have a surplus which is sold. These trees of all ages up to thirty years old are thrifty and bear abundantly and never had any care or attention that a commercial fruit man would naturally give to his trees. And every thing in evidence goes to prove that fruit can be grown successfully on the Bayfield peninsula, in a commercial way. There is one winning feature of our climate up North. Fruit of any kind from the strawberry up to the apple never met with accidents, in the spring. Late frosts in the spring never kill fruit blossoms. Thus every year we have a sure crop of all kinds of fruit. And they all load up heavily with fruit.

Now I have shown that the fruit is a sure thing. You have got the fruit and the next thing is to get it into the market. And there is where we excel.

We are located well up into a non-producing fruit region and have the best and highest priced markets of the whole country located conveniently all around us. We can reach by water, many large and good markets in five or six hours. And by rail in ten to fifteen hours we can be in every village within a radius of four or five hundred miles, and the condition of that mar-

ket when we get there, is as clean and hungry as a hound's tooth, and not a competitor in sight, they have all had their rush together, glutted the market, destroyed prices, and some gone home financially crippled. We step in after the crash with our high colored, high flavored fruit when everybody is fruit hungry. Ask our own prices, sell everything quickly and go home jingling the gold dollars in our pockets happier and wiser men. Thus it is in every line of fruit we grow. We enter the market when it is naked and bare.

Our strawberries ripen after all other sections of the country have marketed their crop. So it is with our raspberries, blackberries, currants, gooseberries and cherries.

How is it in the apple line? The summer apple, Yellow Transparent when it is ready for the market, there is not an eating apple on the market. It ripens about the same time as the Duchess in more southern latitudes. Our Duchess goes to market when all other Duchess are done for. That is an apple we are especially proud of. It will hang on the tree until it is thoroughly ripe and highly colored, very juicy, hard and firm as a Baldwin and will keep two months after being picked.

Our Wealthy go to market when about all fall apples are gone and the winter apples are not in eating condition.

Now for crab apples, there is no place on earth, especially so in the Northwest, where the Transcendent Crabs will be so firm, hard and juicy, clean and even-colored as those we raise up in that Northern Country. They go to market in such condition they command the highest price and no section can compete in quality and price.

So it is with every fruit we grow appears to have a market all its own. Now to sum up the faith that is in us for a commercial orchard. The prominent essentials are: We have got the climate and soil to produce the fruit. We do produce the fruit not one year but every year. Our near markets are unlimited. We enter markets when there are no competitors and can demand a good fair price for our fruit. Our fruit will rank equally with any produced anywhere, and in some respects better. With this showing before us, we expect in a few years to show to the state the possibilities of her richest fruit district, and in time we will ask that the old legend be placed back on the map "The Fruit Fields of the Northwest," and that the Bayfield peninsula will no longer be nicknamed the banana belt, but the golden

fruit belt of Lake Superior that being indicative of the golden dollars of the fruit man's harvest.

DISCUSSION.

Prof. W. A. Henry: It has been my pleasure to have something to do with the development of Northern Wisconsin. It was I who caused a bill to be introduced into the legislature looking toward the publication of a book of 50,000 copies, which describes our New North and when that matter was in progress, a good friend of mine, one of the leading citizens of this state, came to me and said, "Prof. Henry, are you not making a mistake when you say there are agricultural possibilities in the North? Do you realize what you are saying? You are Professor in the University, you should be careful." I said, "I have been on the North Shore, I have been all over there, have been up to St. Paul and Duluth and so on, and I have seen the country all along there. Now, I realize my position and I am going to stake my reputation on the agricultural future of Northern Wisconsin." I published the book, settlers poured in, the country is steadily filling up, and a commonwealth developing. Now, I wish to say there is a region still undiscovered and the gentleman who has read the paper is one of those who went up there as a pioneers. The land immediately adjacent to Lake Superior and that immediately drains into it is the country that I wish to consider, that and that only, I am speaking particularly of that close to the lake. You must remember there is the largest fresh water body in the world enormously deep, cold all the time, warm relatively in winter, but cold all the time. Now, I want to say that for apples of certain kinds, for cherries and for some of the small fruits, currants, strawberries and raspberries, that there is one of the most promising regions in all America today for the enterprising horticulturist. I want to say to you who get the pamphlets advertising such countries as the Hood River Valley and Wenatchee Valley, I have been in most of those places and studied them and while you can grow finer fruit in those valleys, while your trees will bear younger and more prolific, you must remember the enormous tonnage you will pay the railroad companies, you must remember that only the choicest apples are put in those

boxes, and that they must be hauled over two ranges of mountains and across the desert to find the largest population. Now, that region never can produce apples in quantity and never will, but what we want to know is what we can do ourselves individually and you that are looking with longing eyes toward the far West and to those pamphlets so gorgeously pictured, telling of the trees they can grow there and telling what prices they are getting there, do not be carried too far off your feet. If you want to find a profitable region for your enterprise, you will find it right near the shore of Lake Superior, just as the gentleman has described. Now, do not get carried off your feet by thinking there is something better way off. It is not necessarily true. You may go to the West and do well, you can stay right in Wisconsin and do well. I wish to say that nearly all fruits do well and not only fruits, but that legumes flourish in a surprising degree. The College has branch stations near Lake Superior and this year a man threshed eight bushels of alsike clover seed from an acre; that seed was worth about \$10 per bushel, so he received a return of \$80 from one acre of alsike clover seed. We almost duplicated that. The college had a clover huller taken up there to help the settlers. Now the pea canning industry is going to become an enormous one on Lake Superior and I want to go on record in the publication of this Society as predicting that in the near future—it will be a number of years yet, because the land will only clear up slowly, but in the not distant future, there will be pea canning establishments all along the south shore of Lake Superior that will be putting up the finest peas by the millions of cans that will ever be sold in the market, and the region will be famous for canned peas, clover seed, alsike, and hemp. Small fruits, apples and cherries will be grown in that region and people will be thanking Lake Superior for its great refrigerating powers. The time is not far away when the people of Wisconsin eating their first strawberries, coming from Texas, Louisiana and Florida, will eat their last strawberries furnished by the carload and train load from the Lake Superior regions. Now these are prophecies, and while I may not live to see them, there are those in this room that will live to see them and I do hope there will be some here that will go up there and help pioneer that country and help develop it and bring about some of these things that are sure to come and do not be carried

away to other regions until you have at least looked into the possibilities of the region that I speak of.

Mr. Bennett: I would like to add a word and that is that for twenty-one years I have traveled up to Bayfield and along that country and I saw the corn green there long after it was frost-bitten in the southern parts of the state, green as grass, and I have seen the fruit there and Mr. Knight I knew a good many years ago, if I recollect right, he was a sawmill man and I sold him some oil once.

Mr. Knight: I will say to the gentleman that I have been one of the pioneer lumbermen of that country for many years, and now I am a pioneer fruit man. I am setting out an orchard, I have thirty acres of apple trees two years old and I am going to put out more, make it forty acres next spring. I am going to test the strawberry culture and I have a number of other friends up there that have bought land and gone into business there in the same way. They are far more skilled than most of us, that is, I do not claim to be skilled in growing fruit, all I claimed to be skilled in was in cutting down trees, now I am going to get skilled in growing some. I see my neighbors everywhere with trees, with cherries, with every kind of fruit that I can think of, up in that Northern country, growing without any care, without any attention whatever, and I believe that a man that is skilled in the business, who has brains or the scientific knowledge, can go up there and beat the world anywhere, I do not care where he goes,—in prices I mean. It is just from the fact that I stated, that he has the market where no other man can compete with him in everything that he raises, he can ask his own price. I know of a man right near town, a laboring man in the sawmills there, who bought a little piece of land from his neighbor and last year he grubbed and cut down the bushes and plowed a little around the stumps and planted one sixth of an acre of strawberries and last summer he sold \$214 worth of strawberries off that one-sixth of an acre. How did he do it? He got from 12 to 15 cents for every quart of berries that he sold. I presume he did not raise any more strawberries than the rest of you would raise, but he got a better price for them. Speaking of vegetables, I do not believe there is any place on earth where you can grow finer vegetables than you can right up in that northern district. The peas are the finest in the world, the sugar corn is the finest and sweetest in the world. You will

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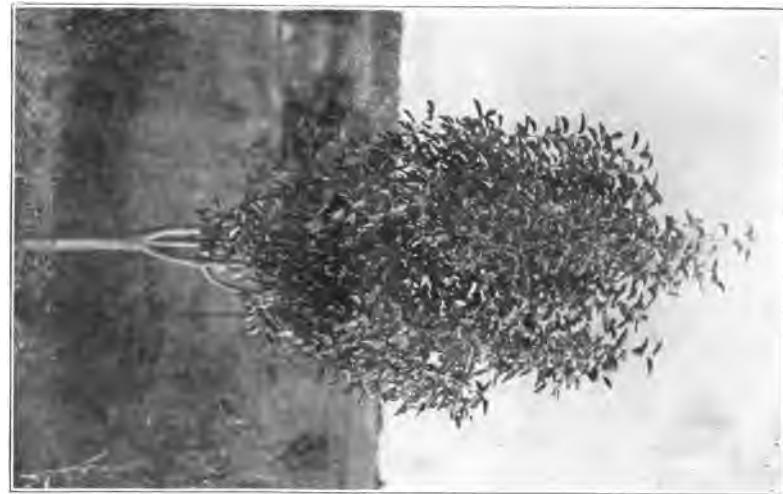
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Two Whitney crab trees similar in age and size when planted, "A" in sod, "B" in cultivated field. Trees stand less than 20 rods apart. The sod land much richer than the cultivated field, and the latter cropped between trees. Three years planted. Near Madison, Wisconsin.

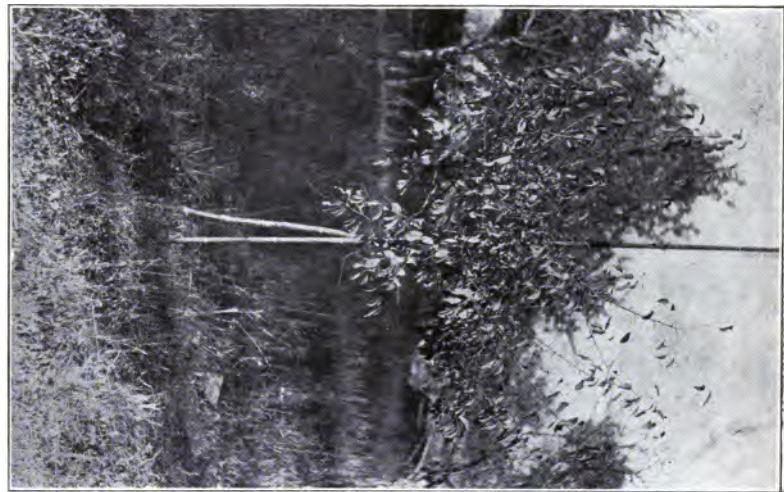
(A)



(B)



Two Wyant plum trees under conditions similar to Whitney crabs shown in preceding figure. A in sod, B cultivated. Can we expect success by planting fruit trees in sod? Volumes of argument cannot answer this question better than these pictures.



see Evergreen corn standing there green six feet high, some of it, when out around in this country everything is killed with frost. You have an earlier spring than we do, you get the benefit of the spring sun much sooner than we do, but in the fall we put you all out. We have grass until the snow covers it up that is green and in the spring when the snow melts off in one week, that grass is green and growing like a weed. That is the kind of country we have.

The Secretary: While I agree fully with all that has been said and can certify to a large part of it, I think this point cannot be too strongly emphasized, viz., that the region that Mr. Knight and Prof. Henry have spoken of is comparatively limited in area; that we should speak of the Bayfield region, or the Bayfield peninsula and not of Northern Wisconsin. I got into considerable trouble a few weeks ago in objecting to some statements that I feared were about to be put out that Northern Wisconsin as a whole was the "banana belt." Now, I think we need to be very careful here in going on record in that respect, because, as you know, though the gentlemen who have spoken here are wholly unprejudiced, that it always happens that there are people who are following in our trail who are not so unprejudiced and others who are apt to take up their words and change them somewhat, because I believe all of you who are familiar with the conditions will agree that there are immense areas in Northern Wisconsin where probably fruit cannot be grown, ever, successfully. I have in mind that immense region known as the Lake Superior Red Clay region, that great bowl of thousands, probably millions of acres with a sticky red clay soil, where the Horticultural Society has not up to date succeeded in even starting fruit trees, to say nothing about getting fruit from them, and we have been trying there for four years. A little later on in the program we will hear from other sections in the state which will probably emphasize what Prof. Henry has said, that Wisconsin is the place where money may be made from growing apples, not the far West. I stated four years ago before this Society that I firmly believed that in the southwestern part of the state more money can be made from growing fruit under certain conditions than in any other part of the United States, and with three or four years' further observation, I am willing to repeat that statement. It is likely that there are other sections and it is possible that the Bayfield region may also be put in the same

class, but I think we should be very careful to emphasize the fact that there is but a limited region and it is not all Northern Wisconsin where these conditions prevail.

Mr. Delwiche: In regard to that red clay, I worked in that section and I want to say that you can raise strawberries on that red clay. I know a party living at Superior who has marketed \$800 worth of strawberries from one acre and has done it three years in succession and there are other people who are doing as much. I will not say that all fruits are going to succeed very well on the clay belt, but I believe along the lake from Superior eastward, there are many sites where apples can be raised profitably. I am not talking about the Eastern apples, like the Baldwins or any of that description, but I believe that the Duchess and even the Wealthy will thrive as far westward as the city of Superior and so far as the strawberry goes, I can say that there are very few localities near here that are as well favored as that belt adjoining the city of Superior. I believe that section is better favored in the matter of the strawberry than is Bayfield peninsula, not climatically, but because of nearness to market. There is a market there, probably better than any in the country, and you can raise the berries, you can go throughout that section and you will find men who are making as much on those patches of land from one-half to one acre as other people are doing on five or six acres in other sections of the state.

The President: In justice to the other sections of the state, as interesting and entertaining and profitable as this particular topic may be, it seems that we shall have to close this and give some of the others a chance.

COMMERCIAL ORCHARDS IN THE CHIPPEWA FALLS REGION.

C. L. RICHARDSON.

While it has cost our section thousands of dollars and our fruit growing pioneers four decades of their lives to realize some of the failures that must inevitably attend certain lines of endeavor, while we hope to profit by their experience it is I shall assume their successes that are to be presented.

Our section in common with the rest of Northern Wisconsin is ancient, much eroded land bearing everywhere the imprint of the glacial epoch. At every falls and rapids of the Chippewa River outcrops of granite are to be found indicating apparently the original igneous rock at no great depth. The surface soil is either (1) light sand, (2) sandy loam, or (3) stiff clay.

Our successful orchards are with a few exceptions located within the limits of a parallelogram beginning perhaps ten miles southwest of Chippewa Falls and extending northeast for forty miles to the junction of the Chippewa and Flambeau rivers. Moreover they are all found on one fixed type of soil. Its surface is broken and hilly, an ascent of one hundred feet from base level to hill-top sometimes appearing. These hills frequently appear as chains or ridges whose prevailing trend is north and south.

The soil is a heavy clay, red or slightly yellow, very fine, adhesive, comparatively impervious and hence retentive of moisture, showing under the microscope some quartz and mica and a large amount of feldspar. It is a cold soil, that retards spring growth, promotes early hardening of wood, and discourages untimely fall growth when the weather chances to be unusually warm. One orchardist reports a clay loam containing sand, and another a loam surface underlaid by eleven feet of clay.

This clay varies in depth from eight to thirty feet; perhaps ten to twelve feet is a fair average. In places it is interspersed with stones or boulders, but in the better sites these are absent. The clay is underlaid by gravel, sand, and in places, sandstone.

The forest which originally covered this land consisted of red and white oak, basswood, ironwood and birch, interspersed with ash or poplar, and occasionally a maple, butternut, or blue beech sapling. Hard maple occurs in a few places, while the pine is conspicuous by its absence.

While it is impossible to state the extent of the orchards in this section, perhaps three hundred acres in commercial orchards is a conservative estimate. By a commercial orchard is meant one of at least an acre and a half in area, some part of the crop of which is sold. Of this three hundred acres two-thirds is grouped in a single township, the component orchards ranging from five to sixty acres.

An investigation of exposures fails to show any superiority in northern or northeastern slopes. The larger orchards extend

over hill and hollow presenting slopes and exposures in all directions; the smaller orchards face any way that happens, and I have neither seen nor heard any claim concerning the superiority of a northern slope. On the contrary, a few orchardists express a slight preference for a southern slope. We have orchards on level ground, on hilltops, and in the valleys between, and all seem to thrive equally well so long as they are high enough to secure proper drainage and circulation of air. The best orchards have almost ideal drainage conditions. Water never collects upon them, winter nor summer, while the moisture-retaining soil is not injuriously affected by the drouth of summer.

Herein, I believe, lie the limitations, which have so far, confined our orchards to the particular type of soil previously mentioned. The apple tree has seemingly no predilection for clay soil, but it does require a strong, deep, fine soil, unaffected by drought. These conditions cannot be fulfilled by a sandy loam hence the constant recurrence in our orchards of the one type of soil.

Just when the apple industry began it is difficult to learn, but as early as 1867 a few trees were planted, mostly Transcendent and Whitney. The oldest of our present orchards were apparently established about 1870 or 1872 and a few of these old trees are still in existence. One of them a gnarled old Transcendent has a record of 27 bushels of apples. About 1890 many more trees were planted and the third period of marked expansion began about the year 1900.

Many trees have been the victims of improper methods of planting. People attempted to save labor by digging small holes, cramping the roots of the young tree and affording it insufficient root pasturage. Also there is danger that the spade or other implement used to dig the holes will leave a "plastered wall" about the hole, through which the fine fibrous roots of the young tree cannot penetrate. One of our leading orchardists uses about one-tenth of a pound of dynamite to open and loosen the ground. But it is not well to plant at once. Wait two or three days, or if possible until after a rain to allow the gases generated by the explosion time to dissipate.

The orchards of this section are planted in rows or squares at distances varying from fifteen to thirty-two feet. The direction of the rows depends apparently on the conformation of the

land, although some of our orchardists prefer rows extending northeast and southwest as a partial protection from the sun.

Apparently there are some forty or fifty varieties of apples grown in this section, twenty of which are crab apples and hybrids. Among the large apples which are grown the following are usually exhibited at the Northern Wisconsin State Fair.

Alexander, Duchess, Snow, Swaar, Fall Orange, Peerless, Pewaukee, Haas, Hibernal, Longfield, McMahans, Okabena, Pattens' Greening, Northwestern Greening, Switzer or Red Queen, Wisconsin and Perry Russets, Talman Sweet, Totofsky, Utter, Wealthy, North Star or Dudley, Walbridge, Wolf River, Yellow Transparent, Newell's Winter.

Among the crabs and hybrids the most important are Briar's Sweet, Gideon's No. 6, Hyslop, Martha, Sweet Russet, Transcendent and Whitney.

Our most valuable apple is the Wealthy. In one sixty-acre orchard forty acres are planted to Wealthy. Many of our orchardists say that if they were to plant a 20-acre orchard it would occupy 15 acres. It is a good keeper, one grower reporting 10 bushels in his cellar Jan. 4th, while last year he kept them until spring. The trees can scarcely be called perfectly hardy. Some of them sun-scald in early spring and a few usually freeze out especially if the winter be severe. They are being more extensively planted than any other variety.

Perhaps the Duchess ranks second in importance though it is not being as extensively planted as some other varieties, especially in the larger orchards. It is a great favorite for fall use, and the tree is popular on account of its vigor and adaptation to somewhat loamy soils. It is a heavy bearer, begins young and lives for a good many years.

The Northwestern Greening is being extensively planted, probably ranking third among our apples. It is not perfectly hardy, but will stand four or five ordinary winters and then be killed by an unusually severe one. This is especially true if the trees have borne a heavy crop the previous summer. The young trees, not yet in bearing carry over well, even when the bearing trees freeze out. It is our only real winter apple, presents a fine appearance and sells well, in other words, it is a good commercial apple. One grower reports picking 20 bushels from 100 trees five and six years old,—their second crop.

The Fameuse or Snow is perhaps our best eating apple but

does not seem to be hardy enough to be generally grown. Almost every orchard has 2 or 3 trees but none have very many. Two veteran growers report that they cannot grow it on their hillsides but can grow it down in the valley between. The Pewaukee is unpopular, not very hardy and there is no money in it. The Longfield is badly handicapped by its small size, otherwise it is a valuable commercial apple, smooth, bright and handsome. The tree grows rapidly, bears young, attains a large size, produces a large crop, and lives to a good old age. One grower reports the McMahan as not being hardy, but the great weight of opinion is that it is unusually so. Personally I am inclined to think that the McMahan, in company with the Wolf River, Duchess and Hibernal can be grown upon a greater diversity of soils than many of the others. I doubt if it is necessary to plant them upon the one type of soil so far considered—in fact there are a number of small orchards throughout our section upon loam where trees of three of these varieties have flourished for six or seven years past.

"The Wolf River," said one of our orchardists, "is hardy as an oak," but its quality compares favorably with cork. On account of its large size and fine appearance it has a ready sale. One grower sold twenty bushels this fall at \$1.50 per bushel. The tree is too slow in coming into bearing. I have seen trees ten or eleven years old, fifteen feet high and have not yet borne. Nevertheless it is exceeded in acreage only by the Wealthy, Duchess and Northwestern Greening.

We have two valuable early fall varieties—the Yellow Transparent and the Tetofsky. The former sold last fall at \$1.20 per bushel. It bears early, grows to a large tree, produces a heavy crop and is long-lived. We have trees thirty years old in our vicinity. Unfortunately it blights especially if the soil be rich.

Tetofsky trees seem to be in demand—one grower said he would plant 500 trees if he could get them. One orchardist reports the Okabena as his best paying apple, and several speak in high terms of the vigor and productiveness of the Hibernal. But its quality is, as one of them said, "Even worse than the Wolf River."

For the present and the near future our commercial apples are Wealthy, Duchess, Northwestern Greening, Wolf River, Yellow Transparent, Tetofsky and Whitney. The McMahan's, Hi-

bernal, Longfield and North Star, are on the road but have not yet "arrived."

None of our orchards, except that at the State Home, are sprayed. So far, our orchardists have not found it necessary to spray, but the time is fast approaching. The codling moth though not severe, is wide spread in its ravages. Ants have killed more trees than any other enemy. Mice also work considerable injury, especially in orchards that are mulched early with hay, straw or coarse manure. One grower reports the loss of one hundred trees during a single winter from this source. They occasion far more injury than rabbits. Limb blight and leaf blight are reported in a few instances, being I imagine local manifestations of the fire blight. In one orchard I have detected several spots which resembled apple canker.

Up to the present our orchards have been incapable of supplying the local demand, consequently there has been no shipping. But with the present rapid expansion of orchards, this problem will soon require solution. Meanwhile apples have sold at from 75 cents to \$1.25 per bushel. One orchard of between six and seven acres sold a thousand dollars worth of apples this fall; while another of perhaps 12 acres containing many impractical varieties produced but \$500. As yet, commercial orcharding is scarcely recognized as a visible means of support.

I fail to see that Chippewa county possesses any peculiar natural advantages over the rest of the world. Our land is as good as can be found anywhere and its cost is far below that in most other apple sections. Taxes are correspondingly light. Our railroad facilities are unsurpassed, furnishing cheap rapid transportation to the cities which lie north and west of us. We are so near the northern limit of commercial orchards at present that we will reap whatever advantage there is to be gained from a late appearance upon the market. While our range of varieties is limited, these varieties we can grow to a perfection of form, flavor and coloring perhaps not attained elsewhere.

We have the men, the market, the varieties and several hundred square miles of suitable land; no reason is apparent why the industry should not grow to a size commensurate with these advantages.

CENTRAL REGION.

DR. T. E. LOOPE.

Wisconsin is not an ideal fruit region on account of its severe winters and other climatic conditions not thoroughly understood.

Our people have been engrossed by our more favorable industries, lumbering, grain raising, dairy farming and manufacturing to such an extent that intelligent fruit culture has been confined to a few experimenters. I am of the opinion that the main reason for this is the fact that our early settlers being largely from the eastern states and finding that varieties grown there would not succeed here thought commercial apple growing impossible. This idea prevails even now. "They planted trees and they died." They have forgotten that they exercised some common sense in planting and caring for other crops. They know that corn and potatoes must be of tested kinds, planted properly, cared for with diligence and harvested in due season. They understand that their cows must be selected carefully from milk and butter breeds, that they must be furnished good pasture, kept housed in winter and fed on proper feed and milked twice a day if they are to succeed in dairying. Yet you are continually met by the statement that they have bought and "planted trees and they died."

With the ordinary farmer a tree is glad to die, and die young while it has a chance to go to tree heaven. It has a presentiment of dire results when it is stuck in the ground in a hurry to get the job done. It has that "gone feeling" all the first season and welcomes to its bosom the borer, the tent caterpillar and scale for companionship. Tremblingly it puts forth a few feeble leaves and its terminals show a stunted growth as if afraid to be called bold and aggressive in its growth. Then winter comes in and does the rest. If it should perversely show vitality enough to bud the next spring the plowman rakes off a great piece of bark when he drives past and when he harrows the ground he varies the program by running the drag over it. No wonder it gasps and dies. I have been a sad mourner at many such death-beds but my sadness was mingled with a mad rage to brain the criminal.

"They planted trees and they died." It seems strange that I

have been telling facts but the above is no uncommon occurrence. In fact I have not told half the truth. If perchance it has lives like the fabled cat and grows haltingly until it is old enough to bear fruit it has not only the perils just enumerated to encounter but it is smothered by June grass, impoverished by cropping the ground or gnawed by mice so that if some year it blossoms and bears a crop of scabby apples the remainder of its vitality is sapped and it gives up the ghost. So the end of that thrilling life story is murder followed by suicide.

Can you wonder at the saying "They planted trees and they died." Do people ever imagine that trees have sensations or consciousness? Does it not bleed when broken or cut? Does it not shrink in agony when mortally injured? Does it not feed hungrily in health? Is it not reproduction of its kind as much an instinct as with animals? Can any wise man say that it has no soul?

As to the commercial possibility of central Wisconsin orchards it entirely depends on "The man behind the tree." If that personage will be so self confident or ignorant as to plant Baldwin, Northern Spy, Seek-no-further, King, Pippin or Ben Davis he will speedily join the hands of those who "planted trees and they died."

On the other hand if he plants Wealthy, Duchess, McMahan, Longfield, N. W. Greening, Patten's Greening, Hibernal and some others of the same class he will ere many years begin to wonder what he is going to do with his enormous crop.

But the "Man behind the tree" must come to the front in this problem, no skulking is allowed but he must be in the bright sunlight of common sense and diligence. He must have an elevated location with a soil in which clay has a generous admixture, with lime a constituent, with fertility kept at high grade and drainage in perfect condition. Given all this the man must plant properly and cultivate wisely. He must prune sparingly but well. He must protect from mice, rabbits and the tree assassin. Last and most essential he must love his trees and the tree recognizing this love and tenderness will reciprocate and unfold its buds and blossoms showering on its benefactor its beauty, its fragrance and its luscious fruit. The man gets not only the material benefits from its ministrations but the love of nature grows warm and sweet in his heart and leads him to reverence that great

First Cause that orders all things in such wondrous harmony and perfection.

I have tried in a general way to give my idea of the possibilities of central Wisconsin in the matter of commercial apple growing. The way and means, the varieties and methods of culture are only general. The detail must be left to individual localities and conditions. Every man who dares attempt the problem must be wise and enthusiastic. He must select varieties and location with judgment as to environment and go forward sure of success if he faithfully performs his part.

In closing let me say that one must not plant in low, poorly drained land. He must not plant in sand or on a gravel bed. He must not smother the roots with a tough sod nor ~~must~~ he plant unhealthy trees or trees not suited to our climate.

Then I say Wisconsin has unlimited possibilities for commercial apple growing under the restrictions I have named in a general way. It is amply proved by the few commercial orchards in our section of the state grown by "The man behind the tree" with his common sense methods and his unbounded enthusiasm for his work.

DISCUSSION.

Mr. Hager: I am going to speak from my knowledge of a little different locality than the Doctor has spoken of. I will speak briefly of three counties that I know of, Outagamie, Brown and Oconto. Where the soil and everything else has been right, it is a little different than it was with the Doctor that planted trees, they did not die. While we have very few commercial orchards in the usual sense of the term, we have hundreds, yes, thousands, of small orchards set out by farmers. Where conditions were right, they grew and they are bearing fruit, and they are growing a great many different varieties. I judged the fruit at the Oconto County Fair one year when one grower exhibited fifty-two different varieties of apples. In Brown county, divided as it is by the Fox River, in most places there is a low, heavy, clay land, it is not the apple country, but going back on the west side to a rolling, hardwood timber land, orchards do very nicely. I say timber land, of course the tim-

ber is removed. On the east side you get back into original mixed timber lands on the so-called ledge or rock formation. It extends farther north into Door county, Mr. Bingham will speak of that probably more particularly. I have been more and more impressed as I see the orchards. I call them Farmers' orchards, they are not commercial orchards, inasmuch as they get but very little returns and right there is where something should be done by this Society or some auxiliary toward the point of getting those men who are producing half an acre to an acre or two acres of apples, raise them in such shape and get them into market so as to get some returns for them. I saw apples last fall sold in the market in Green Bay for twenty-five cents a bushel, and it was more than they were worth, just on account of the way they were handled and the orchard was handled. I just speak of that as work for this Society or some other society to do along that line. In Outagamie county it is largely rolling boulder clay where the orchards have been successful, that is, where the farmers planted orchards usually on those hillsides or hilltops. In Oconto county the orchard region is mostly on soil that has been affected by the glaciers. A loamy soil with a porous clay subsoil. It makes a soil that drains well, gives an opportunity or facility for moisture to work up. On a large area of Oconto county where that kind of soil predominates, it was originally covered with maple, beech and basswood timber. It seems as though orchards do well there, no matter whether on hilltops or sides or on the level. I am interested in three orchards in that county and they are all doing nicely. I want to say one word in regard to varieties in an orchard. I have an interest still in an orchard in Oconto county planted fifteen years ago, planted with about a dozen varieties which I considered hardy, the Northwestern Greening is the only one that has failed to any extent. I think outside of the Northwestern Greening not a dozen trees have died and they have mostly died from splitting down, breaking to pieces. The Anisim this year produced such a large crop that the branches bent over and there has not been a tree split or broken. The Hibernal of course has succeeded, you could not kill that with a club and though it seemed that people wanted to mix their apples, my opinion is that if the varieties could be confined to four, that there would be more money in it for every man that has anything to do with it.

THE PROSPECTS OF COMMERCIAL APPLE
GROWING IN DOOR COUNTY AND THE
LAKE SHORE REGION.

D. E. BINGHAM.

In Door county, especially the prospects are very encouraging. I speak of Door county because I am more familiar with the conditions here than along the lake shore. Commercial apple growing in Door county is as yet in its early stages of development but what we have observed in the last 12 years leads us to believe that we have some conditions favorable for the production of certain varieties profitably. Our soil being of a sandy loam with lime stone underlying, especially in the pine belt along the east shore of Green Bay allows us to use methods of culture that could not be practiced in some other portions of the state without producing results that might be of considerable damage to the trees. Our soil being to some extent deficient in nitrogen we are not as apt to produce conditions that will cause blight by thorough culture, and our season being considerable later than southern or central Wisconsin we escape the late spring frost with much more certainty than many portions of the state. The large body of ice that forms in Green Bay every winter serves as a check to the growth of vegetation until the season is sufficiently advanced and no danger of frosts.

The late Joseph Zettle of Door county said that he had never lost a crop of apples by spring frosts during a period of 40 years and that in itself is evidence of the influence of the waters of Green Bay on the lake.

In the spring of the year we have considerable cloudy weather and often I have noticed instances where the thermometer would reach the freezing point but from the fact that the sun being obscured the rise in temperature was so gradual that no injury followed. These same conditions prevail in the fall. This fall for instance we had no killing frosts till some time in October, I think after the 10th.

The idea that varieties of apples that are not hardy in southern Wisconsin can be grown in Door county is to some extent a mistaken one. We are obliged to use the same list as

southwestern Wisconsin. It is quite apparent that apples of as high color cannot be produced where the per cent of cloudy weather is greater. The keeping qualities of our fruit produced under such conditions are somewhat enhanced. Ripening later when the temperature is not so high it is often possible to keep them in good condition longer.

The varieties best adapted to Door county and the lake shore for commercial apple culture are as difficult to select as ever and I only know the merits of the few I am growing. That there are others that could be made as profitable I have no doubt. It is not so much the variety in my opinion as it is the thoroughness of the grower to get the variety he is growing to do its best. The Longfield if handled intelligently is a money maker but if neglected is very inferior to many. The Wealthy if allowed to overbear early in life is seriously injured. In regard to the McMahan I cannot say that this tree is inclined to overbear but still it produces a good crop and bears young. The Northwestern Greening is good in many respects and for a commercial apple will go until its quality is better known. The Snow I can find no fault with only that it costs more to produce a barrel of Snow than it does of McMahan. The McIntosh promises to be a money maker along with the Snow. This is about the list I am growing with the exception of Longfield.

Early apples of attractive color can be made profitable in Door county. The Lubsk Queen which only takes about 75 days to mature will always bring good money.

In Door county thorough culture is considered the only method, especially where the soil is shallow. We need all the moisture we can get and cannot retain that moisture without the cultivation. It is true our rain fall is more normal than many portions of the state owing to the close proximity to the large body of water, very often getting showers along the Bay while several miles inland they do not get any.

Considering all the advantages and disadvantages of apple culture in Door county and the lake shore I think the outlook is very good.

COMMERCIAL ORCHARDING IN SAUK COUNTY.

WILLIAM TOOLE, Baraboo, Wis.

Not all of Sauk county is adapted to apple growing, but if all suitable sites were planted to orchards and well cared for there might be many hundreds of car loads of apples shipped from Sauk county in favorable seasons.

Experience has led to choice of clay soil well drained, with slope of ground to north, northeast or east, but there are orchards doing fairly well with some variations from these aspects.

Elevation is considered desirable but there are some very successful orchards near the bases of the bluff ranges, as those of J. Palmer, L. H. Palmer, Robert Ramsey and others.

These have clay-loam soil of the glacial drift and are open to the north, and sheltered by the bluffs from southwest winds.

Extending along the north sides of two ranges of bluffs for a number of miles many orchards of this class might be established successfully. The most important orchards of this class are those owned by the two Palmer brothers who shipped the past season together, about equal to six car loads of apples of their own growing, one car being sent to Virginia with profit. In addition there was a considerable amount of apples disposed of to farmers and in the local markets. Of course it is understood that the apple crop was a light one the past season.

The bluff ranges mentioned are united at their eastern terminus near the eastern edge of Sauk county, and extend westward a distance of between twenty and thirty miles, constituting the quartzite ranges of Sauk county. On these elevated ranges, are many moderate sized orchards, which produce most of years many barrels of apples, which are bought and shipped by those who make a business of shipping apples from Baraboo, North Freedom, Ableman, Reedsburg and La Valle. Among the many orchards on these bluff ranges might be mentioned the Capener, Koepp, and Ringling orchards, near the east end of the south range and the orchards of Bassett, Bellows, Alwin and Karstetter centrally on the same range, Ableman the Terrys and Mash, are some of the or-

chardists centrally on the north range, while further west on the same range are the Foster orchards which were planted over forty years ago and are producing well.

The Hirschinger orchard might be classed with the quartzite range group, being in the same kind of soil although not having the elevation which many of them have. Westward on these ranges are many good orchards, beyond the scope of the writer's personal knowledge. These bluff orchards would average at an altitude of 850 feet above the river in the valley between the ranges.

Another class of orchard sites is found on the terminal and other moraines of the glacial drift and situated mostly between the two quartzite ranges, and terminating about centrally of the length of the quartzite basin, along the eastern edge of the driftless area.

The soil is clayey and to some extent calcareous. The various locations are well drained being at a considerable distance above the ground water, and about 150 feet above the river. All of our leading varieties do well on these soils. Among those having orchards on the sites of this class and situated either north or south of the river are A. Brown, E. Baer, Wm. Toole, H. Simons, Wm. Fox, William Rounds, Franklin Johnson and the Tuttle estate. Extending west and north from the quartzite ranges and beyond some intervening valleys are rolling bluff lands having many good locations suitable for orchards. The best orchard in this range of territory is that of Mr. Thomas Timlin in the town of Dellona, who has about twelve acres of apple trees and sold the past season about fifteen hundred dollars worth of apples.

Along the western borders of our county there is a considerable stretch of limestone soil in which Lime Ridge Post Office is about centrally located. There the young orchards are proving what an experienced orchardist might expect, that a great quantity of apples might be grown in this section. These orchards are tributary to the Reedsburg and La Valle markets and I have not been able to secure statistics of quantities of fruit grown.

Considered from a commercial standpoint Franklin Johnson has found that it has paid to grow the following varieties of apples; Duchess, Wealthy, Fameuse, Plumb's Cider, Fall Orange, Willow Twig, Talman Sweet and Longfield. To this

list Mrs. R. Ramsey would add Lowland Raspberry, Wolf River, Patten's Greening, Pewaukee, McMahan, Northwestern Greening and Scott's Winter. L. H. Palmer has found the Utter a very satisfactory market variety and in buying for shipping he finds that in some of the old orchards this variety is doing well and bearing good crops every other year. Some trees of Transparent which had blighted badly a few years ago have since recovered and given paying crops. Newell, Northwestern Greening, McMahan and Lowland Raspberry he would add to the Johnson list.

A. D. Brown champions Longfield and Anisim, but would place Patten Greening with Hibernal. Mr. Henry Simon speaking from the shipper's and buyer's standpoint says that the following varieties take well in the market and are profitable to grow, Lowland Raspberry, Duchess, Wealthy, Plumb's Cider, Fameuse, N. W. Greening and McMahon. Utter is a fine market variety and has done well with some, Fall Orange gives good fruit which is well sought for in the market, but the old trees have not a hearty appearance like those of Plumb's Cider although they continue to live and bear. Wolf River always sells well and would pay if the yield was sufficient. Pewaukee is not popular in the western market. The buyers decidedly object to Longfield and Anisim because they do not hold up well after being placed on the market. Patten's Greening takes well, and Newell has not been on the market in sufficient quantities to earn a reputation. Newell seems to do better on light soil than on clay. The Russets sell well and are reasonably hardy, but are shy bearers.

Talman Sweet sells well but the demand is limited and a large supply would easily overstock the market.

To summarize we might make out the following list of varieties of commercial value for general planting in Sauk County, Lowland Raspberry, Duchess, Wealthy, McMahan, Plumb's Cider, Talman Sweet, Patten's Greening, North Western Greening and Fameuse. Varieties which would probably pay to plant are Wolf River, Fall Orange, Newell, Utter and Scott's Winter. In the fruit exhibit of this meeting there will probably be as usual a good showing of Sauk county apples. Study the fruit display, interview the exhibitors, and be convinced that Sauk county stands in the front rank of the sections of Wisconsin which are favorable for apple growing.



A load of Utter marketed in Crawford Co. from trees twenty-five years old. Not as large as Hood River or Colorado apples but more profitable.



One of the choicest apple regions in the United States. Good apple land may now be had at 30 to 50 dollars per acre. On each acre may be grown 108 Wealthy trees. Millions of people hungry for Wealthy apples. Other regions in Wis. offer equal opportunities. Why leave Wisconsin in order to raise apples?

COMMERCIAL ORCHARDING IN SOUTHWESTERN WISCONSIN.

J. G. BUEHLER, Twin Bluffs.

Commercial orcharding in southwestern Wisconsin is one of the most promising occupations the farmer and horticulturist can engage in for health, wealth and comfort, and it is these three things we strive most for. In locality and climatic conditions southwestern Wisconsin is as highly favored as our sister states, Iowa and Minnesota. We have the soil and elevation for drainage that cannot be excelled anywhere. We also have commercial varieties produced in this state that attracted attention in the markets and won fame wherever they went for color, quality and size. A ready market has increased their demand. With all these favorable conditions shall we stand still or be lagging behind our horticultural brethren just across the Mississippi River scarcely out of sight on bleak and barren prairies who are wide awake to the opportunities and possibilities before them? We can profit by the experience of the past; we have a great experiment station and an efficient state horticultural society to assist us, trial orchards to guide us. Forty or fifty years ago a man would have been called insane had he been able to fortell what has already been accomplished in fruit growing in this northern region. Fortunes are awaiting if we would only grasp them. Duty to our state and nation and the coming generation demands us to be up and doing with a heart for any fate. We ought to be loyal to the future generation as the past has left us free in a land of wealth. Let us look over the hills and see the forest, fast disappearing, some necessary for the habitation of man, some just to get it out of the way, leaving the hills bare to drought, and the torrents of rain that sweep the hillsides of their fertility, robbing future wealth. Every land owner ought to be compelled by law to plant a certain amount of trees best suited to his requirements whether fruit trees or forest trees for lumber and fuel.

I have for several years during the winter been heating my house with apple wood by thinning out my old orchard and have been able to reserve my wood lot.

Commercial orcharding in southwestern Wisconsin is promis-

ing for several reasons: first, we have the soil peculiarly adapted to apple growing, a heavy clay soil, mixed with lime stone and potash and phosphoric acid lying latent in its soil by centuries of leaf mold and ashes that have been left by forest fire, no need of commercial fertilizer.

In my locality commercial apple growing has proven itself profitable as a vocation or as a side line and will continue to be, so if proper methods are carried out. I would not advise a man whose farm consists of rich valley land or low land to plant an orchard. That is the beauty and advantage of the high bluffs of southwestern Wisconsin. Diversity of farming makes it possible to sell the poorer grades at home for immediate use at a fair price. Hundreds of acres of high bluff land in this southwest region could be made profitable if advantageously modified by small areas for the reason that insects and fungi are easier controlled in small orchards than in large tracts in the southern states. We have no need of fear from competition in the markets for size, color and quality but the demands of the markets must be known by the grower that he may grade and pack his own fruit properly to get the highest market price. Nothing is more disastrous to prices than a poorly graded lot of fruit especially in years of large crops.

Wherever a community can grow car load lots some form of organization ought to be exercised for the benefit of all concerned in getting packages and rates.

It is not necessary to give up the portion of land entirely for the orchard. Plant trees wide apart one way to give ample room to raise crops between the rows to feed stock and return nitrogen and humus. I have for eight years been carrying out some experiments in orchard methods in grass culture, meadow culture, alternate and continuous culture and pasturing with sheep. The last named has proven the most profitable and I would recommend it to any man fit for a shepherd for the reason that the sheep are the most economical fertilizer distributers and codling moth destroyers while the wool on the lambs pay handsome profits without much work.

Spraying might be done thoroughly in the fore part of the season with a liberal amount of bordeaux and high pressure machinery decreasing the strength of the bordeaux as the season advances. If we produce first class fruit we can challenge other states which will bring us to notice and our battle will be won.

The President stated that discussion on these papers would be taken up at the morning session.

MORNING SESSION—THURSDAY, FEBRUARY 6.

DISCUSSION.

The President: Yesterday afternoon we had several papers on the prospects of commercial orchards in the different sections of the state of Wisconsin. Now, just for a few minutes we will open those papers for discussion to any one who has anything to say on these locations.

The Secretary: Mr. President, I wanted to say a word or two on that Northern Region. Now, I am compelled to believe all that those gentlemen said yesterday about that country, I do not question their word for a moment, they are enthusiastic over their conditions there, but I do most emphatically protest against this Society going on record as approving of a section so far north as that and advertising it as a commercial orchard region when we have other sections in the state that have been exploited and should be more fully exploited. Now, it may be that there are cherry trees there that were planted at the time of the Jesuits; it may be that there are apple trees there that bear annual crops of fruit and that are apparently hardy, but the stubborn fact remains, that so far as I know, that not a carload, not a wagon-load, not a bushel of apples has ever been put onto the market from that country. It is not a question of what they may be able to do, it is a question of what they have done. Now, there are a number of gentlemen here from that region and I wish to repeat that I do not question their word for a moment, but you know as well as I that in the northern part of Wisconsin there are immense tracts of land that are on the market and must be sold, that there are any number of men who are pushing the sale of those lands and who advertise to the fullest extent the possibilities of that region. I have never questioned the immense possibilities and resources of that region from an agricultural standpoint and I shall be one of the first to push it to the utmost limit from a horticultural standpoint as soon

as it has been shown that fruit can be grown profitably for the market in that region. Now, it takes more than one swallow to make a spring, and it takes more than one tree to make an orchard, while there may be trees growing in that region that are perfectly hardy, there is a difference between growing one tree in your back yard and between growing one acre or ten acres for the market. Now, until those things have been fully demonstrated, I protest against the Society going on record as indorsing that as a commercial orchard region. These men have lived there for forty or fifty years, but I speak from a dollars-and-cents' standpoint, before we recommend that country we should be able to say that fruit can be grown profitably for the market and when I say "fruit," I mean always tree fruits. I have no doubt strawberries and other small fruit can be grown there profitably for the market. Now, I would repeat again and I might repeat a dozen times if it would make it of any value, that there are regions in this state where I am absolutely convinced that apple growing can be made more profitable than any other line of fruit marketing anywhere in the United States by growing summer and fall varieties for the great fruit markets of the Northwest. Such regions lie in the western and southwestern parts of the state; that great range of bluffs extending from Chippewa county south, ending at almost the exact northern boundary of Grant county, which includes the famous Kickapoo region where we have established a trial orchard. We know that apples can be grown there, not by the peck or bushel, but by the carload and have been grown and shipped from Richland county by the carload and there is no reason why they should not be shipped by the carload and trainload from regions farther west. It is up to us, to use a common phrase, to exploit that region from the commercial orchard standpoint before we take up the extreme northern region. There are other regions lying in Door county, Manitowoc county and other counties along the Lake Michigan shore that are equally adaptable. Let us develop those and make Wisconsin an apple state.

Dr. Loope: I have some idea in a general way in regard to the region up North. I should differ a little from Prof. Cranefield in this, that if we find that there is a region there which will grow apples, we might develop that at the same time we are doing the other, because we are all over the state now any-

way, and we are in that region, but I was with those who selected the site at Poplar. We believed that that would be as good a site as we could get there. We found certain trees growing and looking well in isolated sections at different places and we selected this orchard site for experiment. We know now that that experiment is largely a failure, in one respect, not a failure for the Society. When we are putting our orchards out, we do not guarantee that that orchard is going to do well, we are only going to find out whether it will do well or not. As I say, it is conclusively proved now, without going further, that but very few varieties will ever succeed in the Poplar orchard. We have got to cut them down to a very small number and when we have done that we have eliminated all similar locations. If you cannot grow the apples that we put out there in the Poplar orchard, you cannot grow them in that basin on any similar location, that is my idea. Now, we have another location there, there is no doubt in my mind that the other location is going to prove a better location and will grow more varieties of apples than the one at Poplar, and further than that, in some respects this region that was spoken of yesterday is very similar to this region which we are experimenting with, because that is upon the border of Lake Superior, it is within easy sight of both of those locations.

The Secretary: I wish to emphasize what has just been said. It was said yesterday that this Bayfield region got the benefit of the lake breezes. Now, the Poplar orchard is but seven miles from Lake Superior and the Maple orchard but eight miles.

Mr. Kellogg: Describe the soil, give us the difference between the soil where you are and where that orchard is.

Dr. Loope: As far as I have observed, the soil in that basin at Poplar is a very tenacious, stiff clay, and not only that hard clay, but the drainage is imperfect. That clay lies in layers, you can take it up in layers, and the excessive rainfalls and excessive snows that they have there and everything combines to keep the water in that soil. That is one trouble with the Poplar orchard, that is the poor drainage. That is the main point almost. Of course the winters are pretty severe and the springs are very late, which applies also to the other regions. I have not been through the Bayfield region, but I am satisfied it cannot be different. The same conditions must exist in Bayfield that they have in the Superior region. Further emphasizing

what has been said, there is no question in my mind that in Central Wisconsin there are plenty of locations that are eminently fit for commercial orchards, with the restrictions as detailed yesterday. You have got to have the "man behind the tree" that knows where he is going to put it, what kind he is going to put in, and also he has to look after it after it is put in.

Mr. G. J. Kellogg: If the soil very near the lake on this territory described yesterday close along Bayfield and on the Islands is not better than the Poplar soil, we do not want to recommend it, but it is a fact that they are planting apple trees now there by the hundreds, by the thousands, in that country described yesterday, and it will soon be proven whether it is right or not. If our Society has not a trial orchard up there on that same soil, we had better put one there.

Mr. Riegel: I know something from hearsay of this Apostle Island region and the adjacent peninsula. I have a friend who spends about three months during the summer in that region and he tells me great stories about the cherries. Now it would seem to me if we cannot grow the apple there, that we might boom it as a cherry region if there is money in it, and we heard something read here yesterday which seems to prove that cherries can be grown there. This friend of mine is perfectly in love with the region as a summer resort. I would like to know if the soil on the Apostle Islands is the same as on the peninsula, if it is, then I suppose cherries will flourish there.

Mr. Patten: I should not rise to claim your attention on this subject only from the fact that I have visited that section of Wisconsin and have given it some considerable attention in connection with fruit growing, and also that land has been used to some extent by men who, as I have had good reason to believe, are interested largely in the land question in northern Wisconsin bordering Lake Superior, and for that reason particularly I wish to say a little in reference to that country and for the possible information that I may give to those who have not had opportunity of seeing that country.

As Dr. Loope has said, there is in that northern region bordering on the lake, and I judge several miles away from the lake, that low, flat, cold clay soil, and I found also on Madeline Island, in the south end of that island there is a great deal of that very cold soil, and apple orchards have been tried to some extent on such soil, the hardier varieties have been tried there, and my ob-

servation is this, that I would not plant, nor do I think it would be safe to plant any variety of apple on that character of soil unless it had most excellent drainage, whereas some of the higher portions of the island, small portions of the south end and the northern part have a great deal more sand in the soil; it is underlaid with the red sandstone characteristic of all that region. And so the peninsula. There is a large portion of the peninsula that has high rolling land, with a great deal of sand in the soil and with most excellent drainage, and I have no question but that the hardier varieties of apple will succeed on that character of soil. But it must be only the well-tried northern varieties that a man could plant there with anything like safety. There is one feature that I noticed, and that is that the trees bear remarkably young. They seem to go almost immediately to bearing after being established; they do not put on that vigor of growth that they do in this latitude, or even 100 miles north of this, but they do set fruit buds wonderfully and go immediately into bearing. I think I examined nearly all the older fruit that was growing on trees in Bayfield, and I found such varieties as Tetofsky on the hills, looking very well, and the Duchess of Oldenburg were also found in an orchard that was twenty odd years old, doing very well. Wolf River was growing there and doing pretty well. But as I have said, my observation is that it will require the hardier varieties of trees in any portion of that country to make a success of the orchard.

As to cherry trees that are planted there, I saw the older cherry trees on Madeline Island very close to the border of the lake and there are also cherry trees growing in the village of Bayfield that I should judge were twenty or more years old, and so far as I could learn they seemed to be generally quite successful there. I think it is quite safe to say that on the soil that has considerable presence of sand in it and good drainage along the lake shore—no one can tell just how far inland yet, because that has not been thoroughly demonstrated how far the cherry will succeed, but I have no doubt there is quite a section of the country and a large part of the islands where the cherry would be really a success.

All those things of course must be taken into account, and it is very desirable to grow fruit wherever a farmer settles, but in northern Wisconsin generally my advice would be, from long

experience, to plant only a few of the very hardiest varieties until you can learn just what you can do. Bayfield peninsula is different; one can go into orcharding along the shore there I think with considerable safety.

Mr. C. L. Richardson: I would like to add to the paper which I read here yesterday and say a word or two in commendation of Dr. Loope's remarks on the commercial orchard, that one should have but a few varieties and plant those extensively, and I think that that is being done to a large extent in the Chippewa Falls region. James W. Melville's orchard of sixty acres contains forty acres of Wealthy; then he has three, four and five acres of such varieties as the Wolf River, Northwestern Greening and Duchess, and while he has a large number of varieties in an experimental way, he has a few trees or a few dozen trees, as the case may be, of those varieties. There is but one test that the fruit growers up there apply to any variety, and that is,—is there any money in it? They are not handicapped by any esthetic interest in an apple tree as such, they have no fond memories, so to speak, twining around the trunk of an unproductive apple tree; their question is, "Does it deliver the goods?" and that I think is the true test of a commercial orchard.

One thing more: I did not yesterday speak of the plum, the pear or the cherry, for the reason that the story of the plum, like the celebrated chapter on snakes in Ireland, is very short. There were no snakes in Ireland, and our condition in regard to these other fruits is the same. We have cherry trees there, it is true, several of our growers have planted cherry trees many years back, we have trees there 12 to 15 feet in height and there is not a cherry on them and there never has been. We do not know the reason, but the fact remains. During the last five years many plum trees have been planted of the American variety. They are as yet small and of those we cannot speak yet in a commercial way; the trees are growing, but we cannot as yet apply the test, Is there any money in it, and that is our situation there in regard to these various tree fruits which we are considering here today.

The Secretary: Referring again to the Northern Region I agree with Dr. Loope that perhaps we may be able to develop that at the same time we do the other, but I tell you frankly, and, as it were, confidentially there is an element of danger in going on

record at this time as recommending this as a commercial orchard region. There was a time past history when the word of the Wisconsin State Horticultural Society did not amount to much. The time is now when we are a very influential factor in the state, when the word of this Society is worth a great deal to private interests, and there are private interests camping on our trail today, waiting and watching for that word of approval of Northern Wisconsin, and they say broadly, "Northern Wisconsin," do not say Bayfield peninsula. Now, I speak whereof I know in this matter, and if I could possibly I would make it more emphatic. I will go still further and say, there has been presented to me officially or semi-officially a list of names, the names of men who are said to be the leading horticulturists in Wisconsin who are approving of a plan to push Northern Wisconsin, mark you, not the Bayfield peninsula, but Northern Wisconsin as a desirable region in which men could invest their money for growing tree fruits. In that list there was not a single member of the State Horticultural Society, there was not a single man who had been identified with the fruit interests for twenty years past.

I feel it my duty to make these things known, and I say the moment it will be shown that the Bayfield region actually can yield fruit on a commercial scale I hope the members and every one will get behind and push that region for all it is worth and make it the Eldorado, or the Banana Belt or Fruit Belt of the Northwest, as Mr. Knight has stated.

AFTERNOON SESSION—THURSDAY, FEBRUARY 6.

THE CANNING INDUSTRY.

Dr. T. E. LOOPE.

Dr. Loope was called upon to give information regarding a canning plant for canning the products of a market garden.

Dr. Loope: This question is a little out of my line inasmuch that it contemplates a small canning plant such as would meet

the requirements of a small market garden. Now, it is a very difficult matter for me to take that up. I understand something of the canning business, applied on a commercial scale, something of the requirements, because I have been president of the canning company in our town and have seen the processes and I know something about the processes of canning beans and corn but on so small a scale I could not give anything very definite. I suppose this is to be a commercial plant where the product could be sold and not confined to a family. I will first give you something of an idea of a canning plant as applied in a commercial sense. Corn, beans and tomatoes can be easily handled in one plant, and the expense of machinery would not be excessive. You would want plenty of power and you would want the right kind of machinery and you want a storehouse to put your product in and in such case I want to say this, that a great many places in the country have canning plants that they would be willing to part with, cheap, and the reason is that some promoter comes along and tells the farmers some fairy stories about what can be done, tells about the great profits and about how easy it is to get the products put up and everything of that kind. They omit one thing and that is, you have to have capital behind the product and not a little capital, not merely capital sufficient to erect the plant and get the necessary machinery and building and the like, but you have to have more if you are going to be successful. You have to have a surplus fund that will enable you each year to buy your product in the raw state, to be able to obtain the labor and pay it promptly and everything of that kind which you can imagine would come with a business of that kind. There is no use of talking, you ought never to go in without sufficient capital, and I say, in a small plant, a plant that can put out 20,000 cases of corn and 10,000 cases of beans and perhaps 5,000 cases of tomatoes, if you can grow them, you would want \$20,000 to put up the plant and to carry it through the first year. No little sum, and I am not exaggerating that, I have been in the business and we started wrong and I know.

In the canning of tomatoes, you need, in the first place, a scalding which scalds them to the proper condition, and they go then to the peelers and after they are peeled, they go into the filler, which is not an expensive machine, something like \$100, and

from there usually into a steam box, in order to keep them sufficiently to get them so they will cap well, and then to the brush machine, and then to the capper. But before being capped by the machine, somebody has got to put the caps on. There is an automatic capper, but we have never tried that, and he merely puts on the caps as they come from the brush machine and then they go into the capper, which never ought to be less than a Hopkins capper, costing \$700. That capper caps them systematically, then they are passed on, inspected. Then after being inspected they are put away. That is in regard to tomatoes.

In corn, you have altogether a different proposition. You have to have corn cutters, in any sized factory you would have to have two or more; two corn cutters would probably cost you \$150. Those are attended by men or women, sometimes girls can attend to the cutters as well as anybody else and sometimes better, and from there it goes into the machine that takes out the threads and silk, called a "silker." Then it is deposited in a basin below and there it is taken out by hand, in an ordinary plant, and is weighed and the syrup put in. That is done by one man. It goes of course through the brushes in order to clean it off and it is capped as described in the case of tomatoes. Then it goes to the inspector who inspects it, places it in a crate and that crate then is put into a retort and the corn is cooked under a 10-pound pressure at a temperature of 240 degrees for 65 to 73 minutes, then it is taken out and cooled in cold water in cans and then taken away to the warehouse. There is one thing that I have forgotten, which is very essential, this is the cooker. They call it the cooker where the corn is taken first and brined, it is then put into a cooker and mixer and the temperature there is 185. That is automatic, and the cans come out from below and pass through and are filled at the cooker and filler, and that part of it costs quite a little sum of money, that machine. That precedes the capping and then it goes around to the capper, that is automatic. You can set that cooker and filler to put out about 45 cans a minute. You can run it up higher, but if you do you strain your machine and are liable to get into trouble. You may put it up to 60, and fill a can every second, and pass it along. Then it goes to the warehouse where it is piled and also inspected immediately to see if there are any leaks that have escaped attention.

I want to say here that while corn has sometimes been very profitable and was a good crop this last year for the canner, yet the year before corn fell clear below the producing point. You could buy canned corn for about 45 cents a dozen and you cannot produce it for that, it costs more; you cannot can it for that. You have to pay \$6.00 a ton for the corn in the first place and husk it and go through all those operations that I have told you about and it takes considerable help and the whole of it costs you more than 45 cents, you cannot do it. You might possibly get your money out of it at 45 cents, but there is no use of doing business if you cannot make anything on it.

A Member: What should it sell for?

Dr. Loope: You can make a fair profit at 65 cents. We had an opportunity to sell corn at 70 cents and the others did not want to sell. I told them I would not hesitate at all to accept the offer of 70 cents. At that price there was a good profit and you can make lots of money on corn, because you see here is the filler and mixer running at the rate of 45 every minute, you can imagine what you could do then with a double shift. You can figure up very easily with a double shift running day and night that you could put out a large output.

Then in regard to beans, I want to say that beans seem to be the safest proposition of all, excepting peas, and that requires a capital of \$75,000 or \$100,000, maybe \$200,000. With beans, the process is something different. The beans are picked generally by girls and women in the field, and we pay \$35 a ton in our town. You have to pay the girls 90 cents a hundred for picking, and you can raise, if you have a good crop, four tons, so you see you will have something for your land and your trouble at four tons to the acre. I raised that and more last year. You cannot always do that if you do not take care of them, but you can raise four tons to the acre and sometimes five if you have the right kind of land and take care of them right. You can make \$85 out of that anyway, and that is a fair profit. Plant the same as corn, only closer. The beans come in from the field in sacks, or in any way in which they can best be brought. They are placed on the tables at the factory and there they are snipped. That has to be done by hand, nothing has been a real success in the way of an automatic or mechanical snipper. That has to be done by girls, boys are not

in it. It is a fact, you cannot get boys to snip, but the women will go there and make a dollar a day snipping.

Mrs. Jones: Boys are too slow.

Dr. Loope: It is not that, they want to do something big; they cannot do it, they do not do it anyway and you have to have women. Snipping is the taking hold of the little end of the bean and tearing it off.

Mr. Plumb: What is the difference between snipping and stringing beans?

Dr. Loope: It is the same thing, you do not string them after that. Then they go into a grader, which makes four different grades. The little bean an inch or an inch and a half long is the No. 1, the No. 2 is nearly twice as long, the No. 3 as long as one's finger, and the No. 4 is still longer, and sometimes another grade which is called the No. 5 cut. The little bean sells for \$1.40 a dozen cans, the second sells for \$1.30 or \$1.25, the No. 3 sells for \$1.00 a dozen, No. 4 for about 75 cents. The No. 3 should be a long bean, but no seed in it, the No. 4 may have small seed. Of course there is a very small difference between No. 4 and No. 3. They are graded, they have to be sorted by women. While the grader does the work perfectly, the machine cannot do the work quite as well as it can be done by hand. Then the big beans, the No. 4, as we have it, are taken to a machine that cuts them through. There is an automatic machine that cuts the beans. They are then put into what is called the "blancher." It is water almost boiling hot and they are dumped into a crate made of wire and left there four or five minutes, then taken to the filler which is fitted for one hundred cans.

Beans are cooked from 18 to 23 minutes under the same pressure and same temperature as corn. Then they are taken out and cooled with cold water in another retort and then taken to the warehouse. You see there are details that you have to have on the several things that you could not get in a small canning business, that is, the steam power and all that. The power to run all this machinery and plenty of steam besides because the storage is made under steam heat and in other places there is steam required. One has to have steam power and one has to have a canning process. I paid \$300 to get a secret that is not worth ten cents. If you have any common sense you can make your own brine.

A Member: Do they put any acid in it?

Dr. Loope: Not a thing, only sugar and salt. That is the only thing that goes into that syrup.

Mrs. Treleven: Do you use anything else with the corn?

Dr. Loope: Not a thing else. You are not allowed to under the Pure Food Law. You would not be allowed to use any salicylic acid or any other thing in it.

Mr. Palmer: What kind of corn do you use that you get four or five tons to the acre from?

Dr. Loope: The Evergreen. We put in the early and the late.

Mr. Kellogg: The doctor said he gets four or five tons to the acre, the average yield that the grower gets is two and one half tons or four tons.

Dr. Loope: You have a question that is just that of the "man behind the tree." Some men will take care of the corn and some do not. The man that takes care of his corn, has good soil and good seed can get five tons to the acre, but everybody does not do it, because they are not all alike.

Mr. Andrews: Up our way it runs from about one ton to seven, there is that variation, according to the man that grows it.

Mr. Davis: I would like to ask the Doctor if there is such a thing as getting a plant small enough for eight horse power gasoline engine to run it, for corn or tomatoes.

Dr. Loope: You could for tomatoes run that because the greatest power you have to use there is in the filler and capper.

Mr. Palmer: Do they generally pick all that corn at once?

Dr. Loope: It is not best to do that, we make two pickings.

Mr. Hey: Are there several varieties of Evergreen corn and if so, which is the best variety?

Dr. Loope: There are several varieties. I want to say this that if you buy Stowels Evergreen from Illinois and bring it up here, it is a pretty late thing. But in two years' time we will get a great deal earlier crop of Evergreen.

THE WINDSOR APPLE.

JOHN HOWIE, Waunakee.

The Windsor (Windsor Chief) was grown from seed planted by the late J. P. W. Hill on his farm on the northern line of the town of Burke, joining the town of Windsor and one mile south of the village of Windsor, Dane County, Wisconsin longer ago than the oldest inhabitant remembers, probably in 1847 or 1848.

He gave the writer a short sketch of its origin saying he brought apples from the East, planted the seed and planted the trees grown from these seeds into an orchard of about two acres, the cultivation of which he took great pride in and was very jealous of parties who came there for scions fearing they would injure his trees. He would not allow me to cut but brought me scions from the Leitch, Windsor and another variety he wanted to bear his name, which he said was a better apple than the Windsor. I have named it Hill's Seedling.

I have been unable to find any other record of the introduction of the Windsor apple from any of Mr. Hill's neighbors as they did not know there was such an apple grown. The late Mr. J. C. Plumb of Milton, Wisconsin is entitled to the credit of propagating and introducing it as an orchard tree and sold thousands of trees all over Wisconsin and adjoining states recommending its merits in the highest terms.

The original Windsor tree was destroyed about 8 years ago while it was vigorous and healthy for a tree of its age as it was probably more than fifty years old.

At our Annual Meeting in 1879 the report says "J. P. W. Hill of Windsor, Dane County, shows some seedling apples called Leitch and Hill's Red Winter, which is believed to be the apple named Windsor Chief, of fine size, excellent quality and very beautiful which promises well for hardiness."

The tree is vigorous, hardy, upright, its only fault being a tendency to twig blight but not enough to reduce its vitality. In productiveness it is equal to any other winter apple. Fruit is above medium, oblate, slightly conical, light greenish yellow, covered with mixed and marbled dull red and russet, fine grained, juicy sub-acid. Season January to June.

DISCUSSION.

Mr. Buehler: It is five years ago that it was said before the Society that we have not a winter apple in Wisconsin that we could place side by side for a money-maker to compare with the Duchess, McMahan, and Wealthy. I do not know that I can place the Windsor beside them to-day, but we have an apple in that that will keep up until June. The tree is a slow grower, however, I believe that is a good fault in this climate. It has borne annually. I have three trees in bearing in my orchard and I have picked apples from them every year. This last season I picked two barrels and there were scarcely any undersized apples, they run very even.

Mr. Bingham: We have grown it quite largely, the only fault we have to find with it is, it is rather a poor grower in the orchard, that is, it does not attain the size in the same number of years that the Northwestern Greening or McMahan or some of those other varieties do. It is an annual bearer, an apple of excellent quality, a good keeper, the apples are uniform in size. The trees that I have are about eight or nine year old. Under favorable conditions these trees might do much better than they have been doing. We had a severe winter five or six years ago that killed so much nursery stock and so many apple trees in Wisconsin, a dry winter with no snow. The Windsor was injured in the roots considerably, standing beside the Northwestern and other varieties that showed no injury, but I think for southern and southwestern Wisconsin it shows very much more favorably. We have noticed trees right close to Richland Center that showed very little blight, not as much as the Wealthy, and the trees look vigorous and healthy, and it is an early and good bearer.

Mrs. Hey: I would like to ask a question in regard to the Northwestern Greening. From what I have heard here I should judge that you do approve of the Northwestern Greening here, do you not?

The President: I think if you would take a vote of all the people in the State, they would say yes.

Mrs. Hey: We have quite a few planted and so many people in Illinois have been finding fault with it. They say they cannot get perfect apples, that they drop off.



It was suggested at one time that the Hanko and the Twenty Ounce Pippin (not Twenty Ounce) might be identical. A close examination of the illustrations on this page will show that the varieties are distinct. The Hanko is a valuable variety found in western Sauk Co.

The President: I heard J. C. Plumb once say that the Northwestern Greening was pre-eminently a northern apple; when it goes south it begins to fail. I do not know how true that may be, but I would not be much surprised if that is the fact in the case.

Mr. M. S. Kellogg: Has it not been demonstrated by apple growers that the heavier the soil in which you place the Northwestern Greening the greater the success; the lighter the soil, the less the success?

The President: Has anybody else a word to say in regard to the Windsor Chief?

Mr. G. J. Kellogg: I have grown it in the nursery. The only objection I had was, it would twig blight more or less where it was closed in, on open ground there is not much danger. There is not much danger in the orchard. It is not a very rapid grower, as Mr. Bingham says it is a good bearer, a good apple, I have known of its being very successful as an orchard tree. It is hardy enough to go through I think.

The President: The only fault we have to find with the apple is that it does blight in the nursery and it does blight somewhat in the orchard. It does blight severely in the orchard, so that we quit growing it.

Mr. Bingham: I think with heavy cultivation, take it in Richland county, if you cultivate it heavily, it will blight. You have to use different methods of cultivating in heavy clay soil.

Mr. Buehler: Those trees have been in sod ever since I have known them and they have never blighted.

FRUIT MARKETING SESSION.

THE SPARTA FRUIT GROWERS' ASSOCIATION.

MR. B. H. WRIGHT, Sparta.

The question of cooperative marketing of fruits, and the methods of the Sparta Fruit Growers' Association, have been so thoroughly discussed heretofore, that I find it almost impossible to advance any new ideas. But for the benefit of some, perhaps, who were not here last year, I will give a brief outline of our work and its results.

Previous to the year 1906, our Association amounted to but very little, although it had been doing business for about ten years.

It had been able to secure refrigerator cars, thus reducing the cost of transportation; also to gain recognition as an organized company, thus giving material aid to some of its members, who were unsuccessful in dealing, individually, with some of the commission houses.

On the other hand, each member was allowed to practically dispose of his own fruits, either selling directly to buyers on the street, or dictating to which market his product should be sent.

This, may readily be seen, had the effect of over-stocking some markets, while others were left unsupplied.

About two years ago, a number of our most extensive fruit growers decided that some effort must be made to improve the conditions of marketing our small fruits, especially strawberries; as the acreage was steadily increasing, and the price was just as *steadily decreasing*.

Accordingly, at the next annual meeting, every effort was made to get out as many members as possible, and the Association was re-organized upon an entirely new basis, with a capital stock of \$1,000 and a membership of 140.

A set of iron-clad rules were adopted, which have been rigidly enforced; and after a trial of two seasons, the Association has

proved a grand success, with very little dissatisfaction among its members. The officers consist of a president, treasurer, and six directors, who elect a manager and secretary. The manager, practically, has charge of the entire business. All fruit is turned over to him, who places it where he sees fit, always taking care of the order trade first.

Any member, knowingly violating these rules, is notified by the manager that he is no longer considered a member, and his membership fee, which consists of one or more shares of stock, at two dollars per share, may be had at any time by calling at the office.

Our manager aims to keep in touch with other towns and associations, during the berry season; thus avoiding too much competition. He receives, daily, quotations from all the leading markets, and by a little advertising, has worked up a good order business. This branch of trade has increased largely in the last year. A great many strawberries were disposed of in this way; while the orders for cane berries were many times more than our market could supply.

Every grower is given a duplicate receipt for all berries delivered to the association, each day, and their grade. This is a great help to the grower, for, by attending carefully to the next day's picking, he may be able to raise the grade of, at least, a part of his picking, instead of all being marked a lower grade, as before. This grading of our strawberries was one of the first, and perhaps the worst, propositions the association has had to contend with. Three grades were agreed upon by the management, namely "Choice" marked "B," "Extra Choice" "A," and "Fancy" marked "X."

In addition to these, a very few were marked "no grade." These were of the "button variety," and although not a *profitable* kind, will occasionally appear in the market.

For the past two seasons, we have been very fortunate in securing for our grader a man who had the three most necessary qualifications for that position, namely, the utmost confidence of the members; fairness in all his dealings; and good sound judgment of fruits, as he had been educated from a boy up, in that branch of horticulture.

At the beginning of the strawberry season of 1907, prospects were not very encouraging to the association.

The lateness of the season brought the bulk of our crop into market the first week in July.

The brewers had most of the refrigerator cars filled with beer for the 4th of July so we were obliged to send two car loads of strawberries in box cars, to Minneapolis, in one day.

The house consigned to, was notified and unloaded early the next morning, so they sold fairly well on that market; but could have made much better returns if refrigerator cars could have been used, and sent to different markets.

Another source of trouble to our manager,—who, by the way, is Mr. E. A. Richardson, doubtless well known to many of you,—was a shortage in the supply of cases. The association had decided to try the plan of furnishing crates for its members.

Early in the season, the number of acres of berries and their probable yield, had been carefully estimated; but the number of new members and their acreage could not be accurately determined. Consequently, when the crop was all ready for harvesting and cases were called for our supply rapidly diminished. By using some blueberry crates and shipping in some made-up ones, we were able to save our crop.

The quality of our entire crop was generally good, better than the average. One car, containing 720 cases of strawberries sold for \$1,425, in cash; the most valuable car of berries ever shipped from Sparta, I believe. Our association handled during the season 30,556 cases of strawberries at an average price of \$1.09 per case.

With the coming of the raspberry crop, business had settled down to a normal condition again, and, while the yield per acre was not quite up to expectations the net returns were very satisfactory to the grower. We shipped 3,430 cases of red raspberries at an average of \$1.68 per case and 1,628 cases of black raspberries averaging \$1.64 per case.

The blackberry yield was light, but quality and price good; the association marketing 7,437 cases, at an average of \$1.55 per case, of 24 pts. each.

Besides these, the association handled a few currants, gooseberries, blueberries, and apples making the total receipts for the year \$54,160.46 while the expense has been but .04 of this, or about \$2,200.

After taking into consideration the amount of business done during the year; we feel that our losses have been small.

One carload of strawberries, spoiled by delay in transportation, about July 4th was paid for, in full, by the R. R. Company; another carload has not been settled for yet; but feel sure of getting something from that. Aside from this, a few dollars will cover all other losses.

Our association has the advantage of shipping over both the "Chicago and Northwestern," and the "Chicago, Milwaukee and St. Paul" R. R.'s.; the bulk of our business being done over the latter, however, on account of better service to Minneapolis. We also have a good loading shed on that road, where two cars may be conveniently loaded at once.

The O. and C. Department of the express companies has been done away with, as far as the association is concerned. Berries shipped by them were very apt to come in competition with some of our orders, resulting in spoiling the market at that place; hence our orders from there would be cancelled.

We think the plan of making up our own boxes is a good one, as we are getting them made up easier and cheaper this year than last.

Since re-organizing the association has gained 100 new members and increased about \$10,000 in business during the last year.

In conclusion, experience has convinced us that the co-operative plan, rightly managed, is *the only* way of marketing small fruits in large quantities at the present time; making it possible for the grower to increase his acreage, and still get better prices for his product.

DISCUSSION.

Mr. Parsons: I would like to ask Mr. Wright how many acres of small fruits your Association grows to get the amount of small fruit that you grew last year?

Mr. E. A. Richardson: We sent out postals last spring to the members of our Association and return reports received from them covered about 300 acres of strawberries, about 50 acres of blackberries and about 98 acres of red raspberries.

THE CRANBERRY GROWERS' ASSOCIATION.

MR. A. C. BENNETT, Grand Rapids.

In the organization of a sales company, especially in the fruit line, it is first necessary to select a few leading individuals in that line who, having made a success of the business, are fitted to lead others.

In all organized efforts there are some individuals naturally born to lead and others to follow. If good leaders are selected, success is well nigh assured. The next most important thing is to have something to sell that will be satisfactory to the public after being sold. No association can afford to represent or recommend an article that does not give perfect satisfaction.

In order to establish a good reputation the territory sold over should be limited so that the association can supply all its customers who are willing to pay a fair price for a good article.

When I sold our own cranberries direct to the retail merchants, some of them would say: "Bennett, we can buy cranberries of others for \$1 a barrel less than you ask for yours." I said, "I know it, and why don't you do it?" They said, "We have tried it several times and lost money every time by it. There is no use talking for our late keeping berries, we have got to have your berries." Our berries were no better than others, but the care taken in picking, sorting and curing them (the curing process described by me at your last February meeting), was what brought us the extra dollar a barrel and held the trade.

When I left the road as salesman I selected two agents and let my son do the business, these agents working on a fixed price per barrel for their services. They soon found lower priced berries on the market and asked the privilege of meeting competition which was granted; the result was that for several years many of our hand picked, hand sorted and well cured cranberries were sold at the same price as the poorest, dirtiest and meanest raked berries that were offered to our trade but we did not lower our grade and our salesmen greatly increased their sales. Then we called a halt, refusing to make any price in advance of shipping time or to meet such competition, but

before shipping their order would quote them our prices and if not satisfied they could cancel the orders. The result was that we sold all our berries at fair prices.

Now with a successful sales company our berries are sold by the car load to the same jobbers that tried to compete with us with poor berries and they are willing to pay us more by the car load per barrel, than we used to get by the single barrel and the same customers prefer to pay these prices because they can rely on the quality of the berries. A good reputation it pays to keep.

In forming a sales company or a stock company let no one secure more stock than another. Where stock counts for votes it is often abused. Not long ago a man held a controlling interest in a corporation, his son was a candidate for secretary; they were trying to decide whether the salary should be \$1,200 or \$1,500 a year, when the old man arose and said: "My son shall be secretary and his salary shall be \$2,500." Can harmony long exist under such conditions? I know of another corporation, capitalized at \$50,000, working harmoniously for years without the issuing of a single dollar of stock where the rich and the poor have equal privileges.

Avoid too many varieties. A friend of mine in Los Angeles, California, showed me his orchard of apples, peaches, pears, oranges, lemons, cherries, olives, dates, pomegranates, persimmons, plums, nectarines, etc., in which no two trees bore the same variety. What association could afford to handle such a lot? Nothing but a regiment of Italians could do it. Cranberries are all packed in uniform sized barrels in Wisconsin, Massachusetts and New Jersey, containing 100 quarts, dry measure. The law also requires a weight of 16 ounces for a quart, 32 pounds for a bushel, or if sold by measure, that it shall be struck or a level dry measure, not liquid measure, which gives only about 14 ounces to the quart.

Grade the fruit. With cranberries we first take out all that will pass through a $\frac{3}{8}$ inch screen and call them pie berries and sell them cheap. They are immature berries and will not keep long; but if used when fresh are like young currants or gooseberries, very tender and make nice sauce or pies. By removing these the balance of the crop keeps much better and is worth more money. We make several other grades, all of which go under different brands which are made as uniform as possible.

Anything not up to grade or imperfect is left without brand, and sold on its merits. Every barrel should be hand assorted solid packed and uniform throughout.

Bond every salesman and every officer. Sell the fruit for cash or on some short definite time, never consign it or any part of it; to do so ruins your cash customers, whom you should protect. Require every saleman to sell the goods on the open market for the best obtainable prices; to sell in accordance with the laws of the state where sold and of the United States, and that they shall not enter into any combination with any other parties in violation of such laws, giving bonds in sufficient penalty for your protection.

I was one of the delegates sent by the Wisconsin Cranberry Sales Company to New York last year, with full powers to complete, if possible, an organization which should include the New England Cranberry Sales Company, the New Jersey Cranberry Sales Company and the Wisconsin Cranberry Sales Company. These associations united for the purpose, 1st of securing a more uniform distribution of cranberries at less expense than could be accomplished by the separate acts of each.

2. To increase the demand for cranberries by judicious advertising by united effort which has been done to the extent of several thousand dollars.

3. The "National Fruit Exchange" organized by us in New York, with an office in Chicago, does the selling and collecting for us, but they are not permitted to buy any outside berries or to make any offer on them.

4. Each of the three companies retain their individual existence, distinct and transact their own business. If a member of the New Jersey Cranberry Sales Company put in poor berries, we of Wisconsin and New England have no control over him, but if a member of the Wisconsin Cranberry Sales Company puts in poor berries our Wisconsin inspector and that grower are held responsible and must stand the full amount of the loss.

The National Fruit Exchange like the California Fruit Exchange only sell fruit for our members. We do not buy or speculate in cranberries. We have no price fixing committees. The best obtainable price in the open market is where cranberries are in greatest demand and there we sell. There are many others selling cranberries, one party alone selling about

450,000 dollars worth annually. We have nothing to corner the market with but a superior quality of cranberries. In Wisconsin many of us take out the pie berries, in the east they do not. All Wisconsin berries are sold through the Chicago office and remittance is made direct from that office to each individual grower, except a small percentage retained to cover expenses, officers' salaries, advertising, etc. As soon as a car of Wisconsin berries is sold a duplicate of that invoice should be forwarded to our local secretary, so that we may know to whom it went and where. If complaint of any car is made the party who shipped it should be notified at once also our sales agent or general manager and our local secretary, so that an investigation can proceed at once.

I hope the time will soon come when our inspectors will be appointed by the governor of the state or by the Pure Food Commission, and be regulated by law, so that no one, whether a member of our association or any outsider, will be allowed to sell wet, mouldy or rotten cranberries.

Our general manager and salesman, and bookkeeper,—in fact the whole selling force, are men of long years of experience in their particular lines and not one of them are growers. They were selected for their ability and experience after much investigation, regardless of price; the best is the cheapest in the end. They make for us the money wherewith we pay them. Some foolish growers in Wisconsin had previously started a sales company composed entirely of growers, even to the lawyer who drew up their organization papers. They selected one of their member growers as salesman. They sold about \$8,000 worth of berries on which they lost about \$4,000, then they went to law to see how the loss should be divided. The suit was carried to the supreme court, after five or six years' litigation, while our salesman sold several hundred thousand dollars worth without a loss of a single dollar of poor accounts, or a single law suit.

There are four classes of people that should not belong to your selling associations:

1. Doctors: If you belong to a successful sales company you will never be sick of it and need no doctor.
2. Ministers: If your sales company dies it will be a clear case of suicide and they can give you no consolation.
3. Lawyers: They live on the troubles of others and make

trouble for other lawyers to live on. If you need legal advice be free to employ the best talent outside and pay for it.

4. Nursery men: You will have occasion to discuss the value of varieties from the sellers' standpoint as well as the growers' and not from the standpoint of the interested nursery man. Avoid them as you would a hornet's nest.

QUESTIONS AND ANSWERS.

Certain nurserymen advise a severe cutting back of root grafted trees at the end of the first year. Is this advisable or advantageous?

Mr. G. J. Kellogg: No. All I have to say is no. If you want a discussion, go on with it.

Does it improve the root system of an apple tree to transplant it when one year old, and will it pay, on a large scale?

Mr. Patten: Not in your northern climate. It would pay in a southern climate, probably, but not in a northern one, as we have all over Wisconsin and Iowa.

Is it safe or advisable to plant southern grown apple trees (N. Missouri) in Wisconsin, assuming the trees to be cut back during summer in order to ripen the past season's growth?

Dr. Loope: I should say yes, if they have not got the San Jose scale.

Mr. Kellogg: Or you cannot get good Wisconsin trees.

Dr. Loope: Southern Iowa, Illinois, Nebraska, Kansas and Missouri can grow larger trees than Wisconsin can and can grow more perfect trees for a two year old and I do not see any reason why we should not plant them.

Mr. M. S. Kellogg: While under certain conditions it may be true that it may be permissible to set these southern grown trees, I believe that a three or four year old Wisconsin grown apple

tree is better for a Wisconsin planter than a Missouri tree, even if you get the Missouri tree at half price.

Mr. Bingham: I believe an apple or cherry tree grown in the southern states is apt to make a success in Wisconsin if the variety is right; if we bought a two-year-old tree in the south, we are apt to get just as good success in northern Wisconsin as we have with a Wisconsin grown tree, other things being equal.

Mr. Kollock: A few years ago I planted quite a large orchard in Colorado, and I bought the trees from southern nursery growers (Tennessee) and the trees were fine and did well when they were set out, and Colorado is not a warm climate.

Mr. G. J. Kellogg: Perhaps twenty years ago I bought 100 Yellow Transparent down in Alabama, I was short of that kind, and I got some trees to set in the nursery and grow. It took me three years to acclimate them in the nursery row, then they were not good for anything, while the Yellow Transparent grown here is all right excepting for blight. While I have been out on this orchard question, the last three weeks, I found almost all the orchards that were set with southern or eastern trees had died out, the Wisconsin grown trees are still alive, some aged twenty, thirty to forty years. There are some pointers. The difficulty with the southern grown trees is, they grow them so quickly that they grow them soft; they are not hardy, they do not bear the winters. If we have a nice winter after they are planted they may escape injury, but a Wisconsin tree of half the size will double the money.

Mr. Knight: I am a layman in this business and seeking all the information I can get, and there is one point I would like to bring up. Take a tree grown in the southern climate, is it not likely to have a more open texture of wood and more susceptible to injury from cold weather than a wood that is grown in a northern climate, where it will grow slower and will be stronger and stand the climate better than the one that is grown farther south? That is the point I would like to have brought out.

Mr. M. S. Kellogg: In regard to the texture of wood, take a man who is in the habit of making root grafts, and he can tell with his eyes shut and without knowledge of where the tree comes from, whether it is a northern or southern grown tree; not only of the scion, but of the seedling also.

Mr. Bingham: We have planted thousands of cherries, all

southern grown trees, and we have excellent success with all those trees; dig them in the spring, plant them out, cutting them back in the fall, it ripens up in the northern climate and is just as apt to live the next winter as a Wisconsin grown tree. We get a tree with better root system at two years and we get a tree straighter, healthier, of more vigorous growth, and by cutting those trees back, in one season we get a tree that is acclimated to our Wisconsin climate, and I have never found any injury from winter killing of those trees.

Mr. Patten: In reference to whether a southern grown tree, for instance, a Missouri or Kansas grown tree is as good a tree as a tree grown on the 43rd parallel of latitude in your state would,—the reason I think that they are oftentimes not as good at two years of age, or at three years of age is simply because they are overgrown for this climate. The cell structure of those trees is much coarser than of a tree grown in this latitude which has grown considerably slower. For instance, a tree here four years of age would not be as large a tree as a tree grown in Kansas at three years of age, and for that very reason, if the winter following should be a very severe one, you would discover that the southern grown tree would suffer more than the northern grown tree. I have demonstrated this, I think, by actual experience and observation. I think there is no question on that point.

Mr. Edwards: From what I heard of Mr. Bingham's remarks, he confines them to cherry trees. Now, anybody that raises cherries in Wisconsin knows that it is a very difficult matter to raise cherries in this state; if you do not believe it, try it and you will find out. But in regard to apples, I certainly endorse Mr. Patten's ideas. We have gone to extremes here on both sides. If a man has well grown trees here, grown in this latitude, or as far south as Mr. Patten is, they certainly are better than southern grown trees. If you do not believe it, buy them and you will find out they are coarser in growth and subject to being killed in winter, more so than trees grown in latitudes within three or four hundred miles of here. I believe that trees that are grown in Wisconsin and in Iowa or Illinois, and well grown, are better than trees grown in Alabama or some other state way down south, that are grown perhaps in a year or a year and a half; these are tender and soft; you know they are pretty nearly soft enough so you can squeeze

them with your fingers. You shake your heads, but you know they are not as hard as trees grown at Sturgeon Bay, you cannot get around that proposition, Mr. Bingham.

Mr. Bingham: When we receive them they undoubtedly are of softer texture of wood, but the idea that I had in this discussion was: Will those trees live in Wisconsin, will they be a success, and while I do not advocate trees grown as far south as you mention, if we can get varieties that are grown there and grown well, we can get them into northern Wisconsin and by one season's growth, planted in the spring, those trees will be acclimated and that tree is ripe enough in the fall, and I found we have just as good success as we have with Wisconsin grown trees, as far as living is concerned, if the root system is not injured by transportation. There is a great deal of difference in the transportation of the tree from the far south, being held in cold storage three or four months, before the planter gets them, and the roots may be injured by the cold storage and shipping, but if those trees are grown near large towns and shipped in excellent condition and planted out, I am of the opinion that they can be made a success to almost as great a degree, or a greater degree than Wisconsin stock of the same variety.

Mr. Plumb: It is generally conceded at this meeting as I understand from the discussion, that southern stock is worthless. With us we have had a great deal of trouble in getting satisfactory scions and bud stocks. *Would there be any objection to getting them in during the year heeling them in during the winter, using those buds and those scions for buds and stocks on trees grown in our latitude?*

Mr. Andrews: As scions I think the hardiness would be in proportion of the size of the scion, to the size of southern trees.

Mr. Plumb: I would like to ask whether the same rule applied and whether it would be advisable to use for scions stock gotten from the extreme north? I am on the 43rd parallel of latitude, 400 miles west of here. Now, if I wanted material for grafting or budding, would it be better to buy of a person on this latitude or one farther north?

Mr. Andrews: I should think a person on this latitude would be all right, I would rather buy from the man farther north than from the man farther south.

The President: When we want to get a question settled definitely, we always go to the professors. I would like to hear from Prof. Taylor.

Mr. W. A. Taylor: I doubt if Professor Taylor is here, I have no claim to that title. But it looks to me, as far as I have had opportunity to look into this matter, it is simply a question of risk, do you want to take the risk, or do you want to reduce the risk? To my mind there is no sound principle in the selection of trees for planting, or, I would put it the other way, the safest principle in the selection of trees for planting anywhere is to get trees grown under conditions just as near the conditions that you have as you can get good, sound trees. I would not hesitate a moment to go south for a sound tree, if I could not get a sound tree grown nearer by, but if I could get a sound tree grown nearer by, I should stop there.

Are bees a necessary adjunct to fruit raising?

The President: It used to be said that we could not grow fruit without bees, now we know better, I think, because there is not a swarm of bees within five miles of us that I know of.

Mr. Buehler: We have a young man with us who keeps an apiary in the orchard, his name is Reis.

Mr. Reis: I think especially for plums and cherries that the bees are of advantage, they fertilize the blossoms. I think it might be just as well applied to apples to fertilize them and then we do not have to depend so much on other insects to carry the pollen from one blossom to the other. I notice in plums that at any time during the rainy season when the bees cannot work on the plum blossoms they do not set, the same way with cherries, also with apples.

Mr. Hey: I would like to say a word along that line. I have kept bees and watched the working of them. We all know that the alsike clover will produce more seed than any other clover we have. We have grown as high as seven bushels of alsike clover seed to the acre, for the simple reason I think, because the common honey bee can work on this alsike clover and the red clover produces no seed whatever unless there are bumble bees to work it. That has been our experience. I have 600 plum trees and I am going to put a lot of bees right among them this year. We almost always keep a swarm of bees where we grow cucumbers.

Mr. Kollock: In a certain district near Mount Hood, a snow capped mountain, bees do not do well, and the consequence is there are none kept there, but there are some of the finest orchards and most profitable orchards in full bearing that I ever saw. There are no bees there so far as I know. Now, there are some wild wasps, hornets and insects of that kind. Of course they may do some work, but we do not depend on bees, nor consider them essential.

Mrs. Jones: I would like to make a suggestion,—in the clover blossom the pollen is down in the blossom where the wind cannot get at it very well, but in the peach and plum and apple blossom the pollen is exposed and the wind can carry it and that might be an explanation.

The President: I know it is possible to grow strawberries, apples and plums where there are no bees.

Mr. Ray: I keep a few bees and I find that the bees work on plums, cherries and raspberries quite extensively, but on apples and strawberries I very seldom find bees. Among cucumbers and melons they work very strongly.

Mr. Howie: I keep bees, grow cherries, apples and plums. The apples do very well, but the last few years I have been unable to grow cherries or plums. I do not know whether the bees did not do their work, or what was the matter.

Mr. Taylor: That is one of those questions that you cannot answer either way and have your answer right under all conditions. It is a question, in the first place, whether there is some other insect in the community that will carry such pollen as has to be carried. Of course with the plum it is pretty well established that the plum is easily pollinated by wind pollination. In the case, however, of pomaceous fruits, the pear in particular and apple, so far as it has been studied, there is little evidence of wind pollination, the pollen transfer actually taking place through the agency of some insect, and the common bee having been in certain cases that have been observed the insect that did the work. To the question, therefore, whether bees are necessary, I should say it depends upon whether there is some other fellow already there whom you do not have to pay who is doing the work. Then there is this other factor that comes in, and it was very conspicuous this past season in those districts where the margin between setting of fruits and non-setting was narrow. In certain cases in the Ben Davis apple

belt of Southern Illinois which I had opportunity to observe in August when the crop was on the trees, it was very noticeable that the Ben Davis apples that were there, there were not many of them, but those that there were, were where the Ben Davis trees were mingled, where the trees were adjacent to other varieties, such as Jonathan, Aiken, York Imperial, Grimes Golden, Willow, Rome Beauty and Winesap. Ordinarily Ben Davis is sufficiently productive, they are even in large blocks; this year Ben Davis was caught in full bloom by frost the 13th and 14th of April and the blossom crop pretty nearly destroyed and it was a question of either pulling through a few blossoms or not pulling through any, and it is in those cases that the importance of cross pollination comes out, and let me say right here, that whether bees are necessary, or insects, with the pomaceous fruits so far as we know depends entirely upon whether cross pollination is necessary. It has been proved in the case of the Bartlett pear that cross pollination is an advantage, it has been proved at the same time that it is not always necessary that blocks of 10,000 Bartlett pear trees under certain conditions as in California, and quite large blocks in the East under favorable conditions of vigor and favorable conditions at blooming time, set crops without cross pollination. Where the conditions are adverse, as they were down in the orchard at Jamestown, where the discovery was made by Mr. Wait of the Department of Agriculture, Bartlett set nothing without cross pollination, so it is a question the solution of which depends on conditions.

Is a shelter belt a damage to an orchard?

Mr. M. S. Kellogg: I do not know that I can give any light, except to tell the practice of one of the residents of our county, some eight or nine miles east of Janesville, whom some of you may know, Mr. Robert Milburn, who is quite a breeder of Shetland ponies and who has set quite an extensive orchard and in that orchard he has set evergreens among the apple trees, and while I do not know whether they have caused his trees to produce any more extensively than they would otherwise, he has a good apple soil, being on a limestone ridge and rather a heavy soil, certainly it has produced fine apples and the evergreens have grown so they are now as high and in many instances higher

than his apple trees and give considerable protection, no question about that, but whether the matter is one of feasibility I would not say, I have not had enough orchard experience to advance an opinion.

The President: The question is whether it is any damage or not.

Mr. Moyle: One of the oldest shelter belts in the state is in Racine, Co., planted by Mr. John Rhodes, about fifty years ago. It was made up of white cedar, arbor vitae and they grew to be good sized trees. Mr. Rhodes told me a few years before he died it was of no value whatever, in fact it was a damage to his orchard. Now, to plant a shelter belt of shade trees on the west side of your orchard to protect from heavy winds I think would be advisable where we have strong winds, but to plant evergreens, especially arbor vitae, has been found as a rule conducive to blight, and I think most of you will bear me out in that.

I have been in Mr. Rhodes' orchard and observed the effect and the trees blighted badly while in neighboring orchards, where there were no shelter belts they did not blight at all.

The President: I have in mind two orchards, one of them has no protection from a shelter belt whatever, the other one just across the fence had a row of Lombardy poplars planted four or five feet apart as a shelter belt, that was on the west side and north side. In the orchard that had the shelter belt I do not think there is a live tree today, the trees have blighted to death, and gone to pieces, while the other on the west side without any protection whatever is thrifty today. I do not know whether it is due to the shelter belt or to some other condition.

Dr. Loope: I think we are up against the same proposition that confronts us all the time, and that is that you have got to select your location first before you can say whether there is going to be any damage. In a high location where you have a good circulation of air, the belt might be of some use, but take it in any location where the circulation of air might be impeded too much, you know very well that if you get that condition your trees are going to suffer.

Mrs. Treleven: We have had experience both ways. My husband thought years ago he must have a shelter belt for his orchard and he planted one, and I know that the trees did not do as well as those that were planted right out in the open field

and had no protection at all. The trees were all planted at the same time.

Mr. Andrews: We consider a shelter belt on the south good, because the south winds have a tendency, being warmer, to dry the atmosphere. If the shelter belt is on the north, we consider it a damage. A shelter belt on the south will keep the ground more moist and hold more of a layer of snow in the winter if there is any snow on the ground.

The Secretary: Prof. King is here, and I would be pleased to hear from him on the subject.

Prof. King: As the gentleman on my right has just said, this is a complex problem and cannot be answered except you know the conditions of the specific cases. Now, in the case of Lombardy poplars where they are used for windbreaks, those of you who are familiar with the rooting of the tree know that they have a habit of sending their roots very long distances, very close to the surface so that they sap the ground very badly through a distance of perhaps two rows of apple trees and positive injury will come from the tree from the standpoint of feeding rather than from the standpoint of its influence as a windbreak. Of course the shelter belt has its effect not only on the winter temperature, but its effect on the summer atmospheric conditions as to evaporation. It seems there is no question but that the shelter belts diminish the evaporation, the loss of moisture from the orchard, loss of moisture from the foliage where the winds pass first across the shelter belt. That we know from positive observations, that is very effective in the sandy parts of our state in preventing the loss of crops early in the season from sand storms. They have the effect of drifting the sand, not only the drifting, but they prevent the drying out early in the season for quite a long distance away from the shelter itself.

Mr. Palmer: My orchard is protected on two sides with timber. I have been cutting that away on account of the fact that I found around that near timber the gougers were pretty sure to get my apples if I did not clean up the leaves and burn them, so I have been cleaning them up for a strip around there and getting it out of the way. I think such belts would have the same tendency to protect the gouger,—that I think is the worst enemy we have in our country.

Mr. Post: I wish to give some of my experience up in the southwestern part of Dane county. I set out quite an extensive

orchard there. The locality was not very favorable, and I thought it would be necessary to have a windbreak on the north side. The land sloped to the northwest, it was not a very favorable location. The soil was very heavy and the stones among the soil were still heavier, in some places I had to use the pick to dig out the stones and fill in with loose ground to set my trees. I claim that the windbreak or shelter belt that I put there of maple and box elder was a damage. Not only that, but also the oak trees and shrubs on the east side across the road even were a damage, for the reason that those trees near that shelter belt, as you call it, were not nearly as hardy as those that stood in farther. I had another small orchard that was also planted along near the ravine, about fifty trees. That ravine was covered with oak and wild grapes and some wild plums, I thought I would let it stand; I found one row of trees, that is the first row was not as good as the second row of trees.

Mr. Toole: In the spring of 1864 we had a field across which there was something corresponding to a shelter belt, and I was quite surprised to find that the corn for several rows not far from that shelter belt was cut clear to the ground by frost while the rest was only nipped and on close observation you will find that the shelter belt stops the air drainage. Where there is no air drainage, you will find the lowest temperature in the winter and such location is more subject to frost than where there is a free circulation of air and there is one reason why a shelter belt will cause damage where you expect it to be beneficial.

Can a common birch be successfully grafted with scions of cut-leaf weeping birch?

Mr. Moyle: As a rule it cannot successfully be done. It can be grafted and made to grow, but not successfully. The European birch is used more successfully. The cut-leaf birch is very seldom grafted anyway, it is propagated from the bud.

*Do we need Pyrus Baccata roots for Wisconsin apple trees?
Will any other crab seed do as well as the little Siberian crab for hardy roots?*

Mr. Moyle: Sometime ago Prof. Hansen sent me a quantity of Pyrus Baccata to experiment with in my nursery work and I

found that they mildewed very badly. The leaf is of such a nature that on our moist soil in this state it is a failure and I would not advise using it.

Why do the birds take all our Early Richmond cherries and leave the later ones?

Mr. Chappell: Because when the early cherries come there is no other small fruit and they are hard up for something to eat and when you have other berries they leave them and so you save a part of them.

The President: There is another good reason. Is it not a fact that the Early Richmond particularly, if there are any cherries on the tree, they are on the outside of the foliage, while in the later cherries, the Montmorency particularly, the cherries are covered up with the foliage more.

Please name the best five hybrid roses.

Mr. Moyle: If I were to have my pick I would have General Jack, Magna Charta, Paul Neyron, Mrs. John Laing and Margaret Dixon. That would be one white, two pink and one red.

Mr. Kellogg: I agree on two varieties, General Jack and Magna Charta and add Madame Plantier and Marshall P. Wilder and Clio.

The President: Next is the best three climbing roses. I do not think we will get very far apart on that.

A Member: Crimson Rambler, Dorothy Perkins, Queen of the Prairie.

Mr. Kellogg: My list would be the same, except Baltimore Belle, in place of Dorothy Perkins. The Baltimore Belle is a better rose, but it is not so much grown.

The President: Best four summer apples, one a sweet.

Mr. L. G. Kellogg: Sweet Russet, Tetofsky, Duchess, Lowland Raspberry, Red Astrachan.

Mr. M. S. Kellogg: I am not able to decide on a sweet apple for an early apple, but the other three would be Yellow Transparent, Iowa Beauty and Duchess.

The best four fall apples, one of them sweet?

Mr. Buehler: I would choose the Fameuse, McMahan and Wealthy, I do not know of any sweet.

Mr. Chappell: I would take Ramsdell's Sweet for the fall sweet apple, a heavy bearer, young bearer and a good apple, good size. I would take the Wealthy, McMahan and Fall Orange.

A Member: Wealthy, Longfield, Patten's Greening and Broughton Sweet.

Mr. Howie: Utter, St. Lawrence, Fall Orange, Bailey's Sweet.

The President: Now, four winter apples, one of them sweet.

Mr. Melcher: I will put in the Talman for the sweet apple in the winter class, Northwestern Greening and Newell's winter, and those are the only two that have given very good satisfaction with me. I do not want to go outside of my own experience.

A Member: Talman's Sweet, Northwestern Greening, Repka Malenka and Walbridge.

Mr. Kellogg: Malinda, Scott's Winter, Windsor, Northwestern Greening.

Mr. Chappell: Paradise Winter Sweet for sweet, then for other winter apples for late keeping, for myself, I would take the Gano and the Salome and Malinda.

Mr. Palmer: Is this for a commercial orchard?

The President: No, it is for good apples to eat.

Mr. Palmer: I would take the Northwestern, Newell, Talman's Sweet and Golden Russett.

Mr. Richardson: The Northwestern Greening, Walbridge, and Newell.

Mr. Howie: Golden Russet, Windsor, Northern Spy and Talman's Sweet.

Mr. Bingham: Windsor and Snow.

Mr. Moyle: I would like to know where Mr. Howie lives, in what part of the state.

Mr. Howie: About ten miles from Madison.

Mr. Moyle: He has given us the best list, taking quality into consideration every time. Somebody here has recommended Scott's Winter, but it is very sour.

Mr. Palmer: I think the Repka Malenka is about the poorest we have in our part of the country.

Mr. Toole: Newell, Westfield.

What is the best method of wintering begonia tubers?

Mr. Moyle: Dig them in the fall and put them into a place where you can dry them pretty well, or if you have them in pots, leave them standing in pots, let them stand until they become dry, then if you have a home out on a farm where you have no furnace, put them in a closet or some place near the chimney where you can hope to keep the temperature so it will not run below 40, even as high as 60, keep them on an even temperature, keep them dry through the winter in nice shape until spring. If you let the temperature get too low or get damp, it will spoil them.

Mr. Elliott: The best way to keep them in the winter is the European system of packing them in cocoanut fiber. I believe that is not used in this country, it is used very much in Europe for packing, and it leaves them in good shape.

Will the yield be improved (in any given area) if two or more perfect flowered varieties of strawberry are planted over the planting of perfect and imperfect flowered kinds on a similar area?

Prof. Taft: I have carried on no definite experiments, but my belief is that with all plants it is advisable to have several varieties to take advantage of the crossing. I hardly know what the question here means. Now, it seems to me that taking the varieties as a whole, we find the imperfect kinds more productive and except perhaps in cases where we have some very productive perfect flowering kind, I think it would be better perhaps to have one say, good perfect flowering kind planted with one or more imperfect flowering kinds. And so far as the second part of the question is concerned, if two or more imperfect flowering kinds are planted, I cannot see how it would affect the result at all to have imperfect flowering kinds placed together, so far as a direct result is concerned.

Mr. M. S. Kellogg: I would like to ask the Professor a question along the line of perfect, flowering varieties when planted with the imperfect, do you think that the perfect flower-

ing variety would use some of the pollen that is not needed to fertilize its own blossoms and thus add any productiveness?

Prof. Taft: I cannot say that I understand the question, but I believe it is necessary to have a large amount of pollen and as compared with a small amount, I think you will get larger and better fruit if you have what you might call a super-abundance of pollen, and I should want to take every precaution to provide that. We may have seasons when even a small amount would give good results, but if we have a season unfavorable for the pollinating of the flowers, then I would take every precaution to have a super-abundance of pollen present, and I think it is the same in this case as in others where they have been making experiments. They find in tomatoes and other similar fruits, if you call them fruits, that by taking extra pains to pollinate them they gain largely in yield and the perfection of the fruits.

WEDNESDAY EVENING SESSION, FEB. 5.

GARDEN CONTESTS AS A FACTOR IN CIVIC IMPROVEMENT.

C. L. MELLER.

A garden was man's first abode and the memory of that first perfect garden abides with the race seeking expression wherever man finds himself. No nation of any importance from the remotest antiquity to the present but has had its distinctive type of garden. No matter what creed or color the impulse is irresistible to express in a tangible form our dream of the past and hope for the future. None so proud and none so humble, but are as a child in a garden; the king and the peasant are equal here. The world's greatest spirits loved their gardens and found true recreation there; pensive, amidst its busy silent life grief's solace stole upon them unawares. In a garden nature in her happiest moods appeals to man when he is most receptive.

Be it a busy metropolis or a leisurely village nothing improves the appearance of a community so much as well kept gardens for nothing creates a more perceptible sense of refinement nor conveys more firmly the idea of stability and permanency. The philosophy of this is simple. A garden cannot be achieved in a day nor by spasmodic efforts, it is the result of growth, the product of an evolution that is active from the moment that the first spear of grass thrust itself above the ground until the garden is plowed up. A garden is a thing of life where stagnation is impossible, it is either in progression or retrogression and man's intuition gives him to read in each well kept garden the constant unremitting effort necessary to attain the beautiful.

No civic improvement so potent as that which appeals to the individual's pride in himself, in his possessions and in his town. Pride in his garden will develop pride in his neighborhood, which will not be satisfied till his neighborhood conforms to his own ideals. He learns to realize that slovenly surroundings detract from his own best efforts. He becomes public spirited and his garden is his most eloquent speech to his neighbors, giving substance to his arguments. To begin therefore at the back doorstep is to begin at the very foundation of the civic body and whatever is achieved here will exert an appreciable influence and will be of a permanent nature. In a metropolis and more so in a village the garden is the unit and its atmosphere permeates the entire community, so that its appearance reflects in a great measure the appearance of the entire city and vice versa. Averages only are of import here. A city will not take on the appearance of its best garden, nor yet be as slovenly as the worst, but will impress the stranger even as that stranger would be impressed by the average garden.

The child of today is the voter of tomorrow. A more ennobling influence could not be exerted upon him than will fall to his lot in a garden. Nature will reach him there, will speak to the child in her language of symbols, which though he can not repeat yet will he understand. Though at no moment conscious that he is learning still the lessons will abide, will grow in meaning as the advancing years help him to interpret them more clearly, and their influence will increase the farther the years remove him from the garden of his childhood. In the garden the young mind is brought into direct contact with nature's mys-

terious ways, cause and effect are ever active before him. In tangible form the results of procrastination present themselves, experience teaches him that seed and harvest time can not be interchanged, and that without an effort nature will yield him nothing. In a garden yesterday was every yesterday and tomorrow will never be today, but now the present alone is the golden opportunity. No matter what the ultimate object, nothing in the garden, no seed, leaf, nor flower offers an excuse for its being, but is there by its own inherent right.

A body of public spirited citizens can find no better means of stimulating civic pride and making their home town more uniformly artistic than by instituting some manner of garden contest. A plan simple enough in its conception but rather more difficult in its execution. To announce the contest in spring and distribute the prizes in fall were somewhat like throwing a cat into a pail of milk so that it may have its fill. Many factors must be taken into consideration. If a village or city is actually to improve the worst part of it must be amended first, a work wherein the obstacles increase with the size of the community. Much will need to be done in the nature of missionary work. Enthusiasm and energy will need to be aroused of sufficient momentum to carry the contestants through the drudgery entailed in the removal of rubbish heaps and the general cleaning up necessary before garden work can even be thought of. In such neighborhoods where a knowledge of nature can scarce be expected, the ignorant will need to be taught and above all a constant source of inspiration must be provided for persistency is not a strong trait in the character of those that dwell in the dirtier sections of cities. But even if nothing more than a cleaning up is accomplished the result will be well worth the endeavor.

All this accomplished there still remains a vexed question. Into the apparently simple matter of awarding the prizes, a phase of the work intrudes itself that gives rise to some perplexities. In every city there are to be found gardens that are the acme of garden craft, little intimations of that first garden that sprang from love, here also the work of love but not unmixed with years of patient work and hard earned knowledge. They undoubtedly should be crowned with prizes. But to award prizes to those whose achievement is the result of years of study and patient work and in itself a great satisfaction to the worker, were hardly

offering adequate encouragement to the strenuous efforts required to convert a rubbish pile into a garden. Of minor consideration though none the less a factor to be reckoned with is to determine who has actually done the work of the garden, whether the contestant himself or paid help. To let the result alone determine the prize winners would handicap the majority at the very outset and it is not human nature to enter a race where the outcome is clearly against the runner.

As the object of our contest is to stimulate an interest in gardening and to bring some semblance of beauty into those places where dirt and disorder hold sway it is evident that other factors than merely appearances must be taken under advisement in the final distribution of the prizes. Clearly the contestants must be arranged in classes. Nor can it be left to the choice of the contestants which class they will enter, but herein they must submit to the discretion of the committee as guided by the qualifications established for each class. In one class excellence of result would determine the winners, while in another class evidence of the amount of work done would fetch the prizes. He with the paid gardener belongs in a class apart from all. By this arrangement the finished garden will stand as an inspiration to the beginner and hold up before him a class into which he can aspire to enter, yet will that gardener also receive due recognition for his years of work.

To effectively carry on a contest of this nature it will be necessary to secure the service of some one having a professional knowledge of gardening so that he may the better estimate the possibilities of each place and the more accurately gauge the work done. He could work conjointly with or individually under the instructions of the committee having this matter in charge. It would also evolve upon him to help the contestants by every means in his power especially through the medium of some local publication. By visiting individual gardens and pointing out to all the contestants the merits and defects of each he can be of direct service to many beside the owner of the particular garden visited.

Some means of marking so as to grade the gardens will have to be devised. For this purpose either letters or a percentage basis might be used, the latter being better adapted to accuracy and to the computing of averages. In that class where perfec-

tion alone is the aim the gardens need to be visited only for final inspection, though greater precision in grading will result where the gardens are visited at the height of summer and again when fall is at its best. This will be absolutely fair to all. As an illustration let us suppose that three of the gardens visited in summer receive a standing respectively of 80, 85, 95, and in fall taking them in the same order they receive a mark of 90, 85, 85. By totals or by averages we find that the garden achieving the highest percentage is not the highest in fall but the one prettiest throughout the summer; likewise a case might be imagined where a garden in uniform beauty throughout the season attains a higher percentage and yet is not as pretty in the fall as its competitor. Thus where the contestants have been visited twice the real merits of the garden can be the better determined. It will reduce to a minimum the possibilities of a slight mishap or passing defect having too great a bearing upon the ultimate result.

The largest number of gardens will be entered in the class where evidence of the actual work done during that season is to be the deciding factor in the distribution of the prizes. Here a thorough inspection in the early spring before any work at all has been done and a careful record of the condition of each garden at that time will be absolutely essential.

In deciding the contest for this class averages are inadequate, for they would not show the improvement achieved, nor in any wise indicate the amount of work bestowed upon the garden, which is the paramount issue here. The actual amount of work done can best be arrived at by subtracting the garden standing in spring from its standing at the final inspection in fall. An inspection in the height of summer will greatly aid the judges in ascertaining more definitely the actual amount of work represented by the garden, for the fall appearance is hardly a sufficient criterion in as much as it may be due in a large measure to the spasmodic efforts of the contestant, who after indolent indifference the greater part of the year makes a final desperate attempt. Where contestants tie for honors a summer record will also greatly facilitate a more accurate decision, for it is evident that the garden showing a uniform improvement throughout the season represents the sum total of more work than its competitor showing a much greater increase in its fall over its

summer mark than the difference between its spring and summer standing. Nor will the most beautiful garden necessarily obtain first place, for it may not give evidence of as much work as one somewhat inferior from an artistic standpoint. Where, however the placing of the contestants into their proper class has been attended to with care and diligence it will be found that the most beautiful garden of each respective class is apt to show evidence of the greatest amount of work. This is one of the very aims of providing classes.

A further object of establishing classes is to give the man of ample means an opportunity to compete without injustice to him that has less. This wealthy class presents a distinct problem. Here money providing an abundance of labor, plants, and knowledge makes every garden more or less a success at the very outset. These gardens need to be inspected but once nor can the winners be picked solely on their comparative merits. Individual excellence must be considered. To be ranked among the winners in this class a garden can not be a heterogeneous nondescript affair no matter how expensive, but must be an artistic unit expressing a definite idea. A garden must not be an incongruous attempt to mix the Italian, Japanese, and English style of landscape art, as is too often met with. It should conform to the limitations or expanse of the ground and above all must harmonize with the architecture of the home. Swiss architecture can not have an Italian garden for its setting, nor yet can a small Japanese garden be used effectively with a large palatial residence. In a word there must be real harmony and repose in the picture thus achieved. Furthermore the gardens to be winners must be adapted to the climate and local conditions, seeming to be the natural result thereof and not a laborious achievement. A grouping of palms and other tropical vegetation, ever so elaborate can not be considered in the distribution of the prizes, because in a northern climate this is but a makeshift and lacks truth. Thus the most influential citizen can be drawn into the contest and their example be an incentive for others to compete and do their best.

The financial phase of such an undertaking can not be ignored. Several solutions present themselves all depending upon circumstances. If the contest is conducted by business interests, such as a seed house or a newspaper then the costs will be their

concern. Where some public spirited organization proposes to conduct a garden contest the ways and means of financing it may prove quite a stumbling block. In this case it might perhaps not be too much to expect the municipality to subsidize the undertaking in a small way. A popular subscription among the business houses of the city, each firm to guarantee but a very nominal sum and to be called upon to pay as much less as the strictest economy will render possible may prove an efficient way of meeting expenses. A registration fee might be charged in which case it would only be fair to demand a higher fee of those competing in the class where paid gardens are permissible. A large sum will hardly be needed. Where the money is raised by subscription it will avoid possible insinuations if a strict account is kept of every penny handled and the books freely accessible to every contributor.

In the congested parts of every city young humanity abounds, ragged and uncouth, though in tendencies neither better nor worse than the average child anywhere. A product of their environment, they must be acted upon through this environment and in conformity with it. Rubbish heaps and manure piles are not conducive to an appreciation of nature. On the contrary all the associations of such a child will tend to instill into his youthful mind a disdain for the finer influences of life as something unworthy of his ambition and fit only for girls and sissies. He will need to be shown the profitable side of gardening. His desire to achieve something big and tangible can be satisfied by helping him to raise vegetables so that he may have an opportunity to outstrip his fellows in the bigness of his products. It will arouse his enthusiasm if he be shown how to accomplish something out of the ordinary, nothing so very difficult if he be taught to graft a tomato on a potato and thus obtain potatoes and tomatoes on one and the same plant. With the boys interested in the practical side of gardening the girls will of their own accord take up the culture of flowers. Let it be born in mind that whatever is accomplished in such a neighborhood will have an added value because of the very magnitude of the task.

In contrast with these pictures let me present to you photographs of other neighborhoods where a love of nature is the outgrowth of habitual surroundings. These children need no incentive to arouse their interest in garden work, what they re-

quire is practical instruction in garden craft. They will profit by the lesson for it is their desire to learn. The educational and the disciplinarian value of a backyard is well illustrated in the next two pictures. Here is a solution to a problem that perplexes many a pater familias. With the boy's interest centered in his own backyard the rod will not need to be brought into requisition to keep him off the street. A garden can become an outdoor school for the children where all unwittingly they will be their own teachers. In this instance the boys built themselves unaided a little clubhouse and constructed in front of it a miniature lake, the farther bank of which they planted with woodland shrubbery. Thus and in many other ways that the youthful mind will itself suggest can the children be instructed in their play and be held within bounds without feeling the restraint. Let but the average child handle a plant and its native curiosity will prompt it to find out the name.

A garden contest will tend to educate the individual to a better realization of the opportunities that too often lie unheeded at his back doorstep. The possibilities of the garden as a place to spend the vacation will become apparent as his labors lead the owner to a better acquaintance with his property. Thus in a search for the esthetic a direct saving will result and all the worry incidental to a temporary migration into the country will be eliminated. The air in a garden is wholesome. The necessary manual labor provides as much and as varied exercise as a short sojourn in the country can afford. As an excellent example of this the following pictures deserve attention. Observe how cosily and contentedly one can read in a hammock. No little exercise can be derived from the daily task of watering the flowers. Pushing a lawn mower likewise spells muscular development. Carrying the idea of a vacation at home to its logical conclusion it were not an impossible task to convert a city lot into a small but attractive park. The sense of possession heightens the joy of being there. No place so small, but will afford a shady nook for a chair, a dream, and a book. Here fruit trees would yield a varied pleasure, sweet scented flowers in spring, cooling shade in summer, and luscious fruits in fall. No better recreation after the day's toil than to while away the twilight hours in light garden work. The following are different views of a garden that is the result of care and at-

tention bestowed upon it after working hours. The vine covered alley entrance, the rustic tea house, whose floor is strewn with pebbles from the lake and the tall trees make a veritable little park of the place. Lake Michigan but a block away wafts hither the coolest, freshest air to be had anywhere. An old apple tree no matter how unsymmetrical brings with its gnarled and twisted branches a distinct atmosphere into the landscape obtainable in no other way.

The advisability of other ways to procuring the co-operation of trained services to help the contestants individually is well exemplified in the next pictures. The gardens here are not neglected but opportunities lie unheeded for want of a little knowledge. Wooden fences unless very ornamental in themselves should invariably be screened or covered. An abundance of material is available for this purpose; all the hardy climbers such as Virginia creeper, Boston ivy, hardy grapes, and honeysuckles lend themselves readily to this end, and for quick temporary effects there are the annual vines of which everybody knows a few. Against a fence the colored berries of the bittersweet vine have a pretty decorative effect. Along open fences sweet peas fronted by dwarf nasturtiums, or climbing nasturtiums alone or mixed with the peas would look well. An irregular border of hardy herbaceous perennials running along two sides of a fence and taking in more or less that entire corner of the yard would bring color and beauty into the finished garden.

Where a long stretch of fence is to be covered with vines a monotonous sky line can be avoided by the judicious use of trees, which in many instances might as well be fruit trees. Hardy perennials or an occasional shrub will intersperse well among the vines thus used. Covering the chicken enclosure with climbers would add to biddy's comfort, make her less obtrusive, and vastly improve the appearance of many a yard. A sense of privacy without closeness can thus be achieved. A walk must never be too prominent and should preferably be laid out in curves, provided this can be done without sacrificing directness.

The positive ugliness of a high board fence is often glaringly apparent in an otherwise pretty garden. When it is covered with climbing vines the garden will have a background where now it has an eyesore. In just such exigencies are climbers

most opportune. In other respects the grass carpets bordered with flowers is the safest treatment from an artistic standpoint for a very small yard. The decorative value of the common sunflower is accentuated in the next picture, where however an opportunity for the effective use of vines has been but partially recognized. At times an old tree, stump will challenge the gardener's ingenuity to make it appear less an intrusion and more an integral part of the garden. The best way to treat this where to grub it up entails too much work is to regard it as a rockery and cover it with ferns, hardy grasses and trailing plants.

Asters are well adapted to screen a low fence, affording in fall a bank of brilliant color with which to end the seasons floral display. Golden rod is also pretty, but should be used with care for yellow is not a color that will harmonize well in random combinations. Where a fence is a necessity the endeavor must be to render it as inconspicuous as possible. This can be done as already stated not only with a great variety of vines, but also with numerous species of shrubs. A hedge will often prove as efficient a protection as a fence for there are quite a number of shrubs that will make an almost impenetrable barrier, which could be further strengthened by running wire through it. Where a hedge is not wanted or a fence already exists an irregular shrubbery group is a good means of affording a background or defining a boundary.

Wherever possible plant material should be employed in dividing the lawn from the flower or vegetable garden in preference to a stiff and rigid fence. This will avoid bringing a foreign element into the garden. Often a flower border or hardy herbaceous perennials of bushy habit planted at regular intervals along a walk gives a more definite character to a garden. Where board walks are laid grass should never be allowed to creep in among the cracks, it looks slovenly and unkempt.

A garden to be restful and pleasing must avoid sudden transitions that create harsh contrasts and grate upon our sense of fitness, as when a lawn comes to an abrupt stop and the bare ground of the flower or vegetable garden is all too conspicuous. Sweet peas or any other annual vine trained on a simple trellis provides a ready means of overcoming this defect, which can also be obviated by planting in such places a border of tall bushy perennials or an irregular shrubbery group. Bush fruit would serve a double purpose here combining beauty with

utility. Advantage should be taken of a wire fence as a convenient trellis for a riotous profusion of annual vines.

None the less prominent for being accidental the esthetic will often be found combined most happily with the useful in many back yards. A row of currants affords a pleasing background for a row of nasturtiums in front, at the same time effectually hiding the vegetables behind them. Many similar combinations of bush fruit and flowers could be made. The useful grape may likewise be handled in such a manner as to gratify our sense of the beautiful. In summer its shade, in fall its pendent clusters of fruit will recommend it. Even in a vegetable garden a tight board line fence need not remain an eyesore. Melon and many other useful vines can be trained against it. The scarlet runner bean with its bright red flowers and tender beans would be especially appropriate here.

In a garden contest instances may arise where it is exceedingly difficult to arrive at a just decision regarding the merits of a contestant. In the spring the condition of the garden may be such as to place it in the class where evidence of the amount of work done is to be the sole consideration. Though the fall appearance may give evidence of a great amount of work the perplexing factor may be the condition of the soil, which in this particular instance was practically all ash. This in nowise detracted from the appearance of the garden in spring and therefore the labor expended upon the improvement of the soil would not show in the difference between the fall and spring standing. Even where an allowance for this and similar factors is to be made, it is well nigh impossible for anyone who has not actually done the work to rightly estimate it. Common garden vegetables can often be used so as to add a distinctive charm to the garden. Ripening tomatoes reddening in the sun against their fresh green foliage that merges gently into the darker green of the grass afford almost as much color as flowers.

Not every contestant will accomplish something. Gardens there will be whose fall appearance turns out even worse than their spring condition would warrant. Here is one. A pleasing prospect for the neighbor, a rubbish pile and the discarded odds and ends of household economy strewn promiscuously about. Too many urchins to one yard and a grasping landlord will thwart the efforts of the most persistent. Being obliged to move your garden two or three times during the season is not

conducive to the best results. The most meager achievement is here deserving of praise.

Human character involuntarily expresses itself in every phase of human activity, to which gardening though the very embodiment of tranquility is no exception. A garden may be the result of indomitable energy overcoming formidable obstacles. It may be a triumph of the will. Imagine the walls of a house and a stone paved alley as the place for a garden. Here is a garden in just such a location. Wall brackets afford room for pots, pans, and boxes wherein garden and house plants thrive and possess an added charm in these surroundings. A parrot brings animation into the scene. And the gardener? A little dark haired and dark eyed Italian matron, who values highly the medal she received in recognition of her work here in the congested part of the city where just such an influence is needed most.

Little homely customs can be connected with the various events of the seasons in the garden, the observance of which will add a joyous interest to our work. Let me tell you of one. Here is a gardener from pastoral England who grows strawberries on quite a commercial scale and each year the seasons first berries are carefully picked into the best dish and offered as a present to his wife. It happens that the ripening of the first berries generally coincides with her birthday, giving him an accurate record with which to compare the ripening time of many seasons back. True to English tradition he attempted to train a peach tree against the wall of his house with but indifferent success.

The next two gardens distinctly belong in the class where comparative excellence is to determine the awards, irrespective of the amount of work represented. Here is a miniature park the result of years of love and patient work. Indeed the owner lives to enjoy the shade of the sapling that he planted years before. A little pathos too creeps in for two of the cut leaved birch that he set out thirty years ago are dying now. The iron dog in the middle of the lawn, the benches and the lawn table, the gravel walks all tend to betray the German nationality of the owner. Reading this man's character as depicted in his garden we would expect to find persistency and a love for order marked traits of his mental makeup, which indeed is true as borne out in his daily life. He is a successful business man. The spring view of the next garden illustrates an odd, some-

what old fashioned, but withal an appropriate treatment of a small space where a large variety of flowers is desired. The individual beds may be encased with boards, bricks, cement or other available material. The fall picture further shows the possibilities of this treatment. The utility and beauty of a leafy screen is here splendidly brought out. Flower beds as a lawn decoration in the hands of an amateur are apt to be badly placed, ill planted and altogether grotesque. Occasionally one meets with a flower bed that is well located and well planted.

It is to be regretted that we do not have a spring picture of the next garden which was at that time but a sunbaked stretch of clay. The judges in last year's Sentinel contest awarded this garden first prize not on its merits from an artistic standpoint, but solely because it represented an amount of work far in excess of all its competitors, the more astonishing when we learn that the gardener is a young matron of sixty-five summers. From a professional standpoint the garden has many defects, among the most conspicuous of which are the forlorn little flower bed in the lawn, the bare fence to the rear and the heterogeneous planting throughout. These however are due to a lack of knowledge and not to indolence. Indeed the gardener's greatest handicap throughout has been her inexperience in ornamental gardening. What she desires are suggestions that will help her in the attainment of a more finished garden next summer. The next picture is that of a garden which was awarded second prize. Though a more finished product artistically, its markings did not indicate an equal amount of work with its more successful competitor. Here the use of morning-glories is an especially happy one; ranking luxuriantly, they cover completely and grow beyond a wooden fence that would otherwise sadly mar the beauty of the garden as a whole. Adding the finishing touches to the garden, they not only suggest an air of completeness but also afford a very desirable privacy. In the words of the owner, they make it possible that:—"one does not have to live with his neighbors." This is a most inoffensive but effectual way of avoiding a gossiping neighbor. The annual vines should, however, be replaced with perennials, preferably a variety so as to bring color and animation into this somewhat long stretch of foliage. The fall effects of the Virginia Creeper and the Boston Ivy would help to prolong the garden's beauty way into fall. Again there is that objectionable little flower bed

lost in the middle of the lawn. A detailed view shows the very good use of seeded annuals.

The third prize was likewise awarded in virtue of the diligence the garden bore witness to. Its main fault, is the bare fence along the ailey, which in this instance should be screened with an irregular group of some of the taller growing shrubs, such as lilacs, mock-oranges, high bush cranberries, etc. A frequent defect in many back yards is the promiscuous planting of flowers among vegetables. They are not congenial companions. No matter how small the space they can and should be separated. Where vegetables are the main crop, yet a few flowers are also desired for cutting purposes, these latter can be planted so as to keep the vegetables more or less out of sight. Thus the inevitable ragged appearance of the vegetable beds in summer will be less pronounced or altogether hidden. Where the space is very small, it should never be converted into a truck patch, but rather be devoted entirely to flowers, which after all will afford a greater satisfaction.

The fourth prize, a gold medal, was awarded to a garden that illustrates the necessity of establishing a class wherein gardens that are the product of professional skill can compete, without injustice to less favored competitors. The amount of work that entered into this garden can have no weight with the committee, because there are sufficient means at command to provide an abundance of labor, as well as of everything else essential to a garden. This garden and every other garden in the same class must be judged solely from an artistic standpoint and in as far as it conforms to the ideal, for that particular situation, does it deserve to rank among the winners. Such a planting must conform in character to the architecture of the house, as well as provide for the peculiarities of location.

Where the space to be planted is small the apparent size of a garden can be increased by terracing provided always that all other conditions are such as not to make terraces appear labored and artificial. To elevate the garden a little above the side walk will often serve the purpose of protection and privacy much better than a fence can. It will also avoid the air of aloofness that a fenced garden is apt to create in the minds of others. The slopes of a terrace are a splendid location for ornamental flowerbeds. An opportunity is here provided for the exercise of one's skill in designing intricate and artistic carpet beds, for on

such a slope the entire design will present itself to the observer and from any point of view he will become aware of its scheme at one glance. Such a bed on a level would not appear well at a distance because the observer sees it at an angle and it is only when looking squarely down upon them that such beds have meaning. In this respect a flowerbed on a slope bears somewhat the same relation to an observer as a picture on a wall. Imagine yourself looking at a picture on the floor. Foliage beds on small terrace slopes are altogether out of place. Bushes that have a trailing or pendent habit such as the matrimony vine can often be used to good advantage on the tops of terraces. The prizes available for such a contest are numerous. They should be commensurate to the probable desires of the contestants. In that class where work done is to decide cash prizes will prove most appropriate in as much as they will give to the winner means wherewith to further embellish their gardens which otherwise a necessary economy might not permit. In the class where excellence alone is to count and the owners are at the same time the gardeners, pieces of garden furniture or garden statuary would be acceptable. Nor would cash prizes be out of place here. Properly inscribed medals would do for this and likewise for that class where paid gardeners are permissible. Cups and other similar trophies are welcome acquisitions to the dens of the wealthy gardener. Diplomas of merit should be awarded alike in all classes.

WOMAN'S SESSION, WEDNESDAY EVENING, FEBRUARY 5TH.

A SOUTHERN MESSAGE.

MRS. LEONARD L. KELLOGG.

(Mary A. Moyle Kellogg.)

When your worthy secretary, Mrs. Smith, heard that I was going south on a short trip she asked me to send some greeting from the "Sunny South" to this meeting even if I might not appear to present it. But I wish the south could greet you herself as she welcomes me this lovely January morning with a temperature of 70 degrees, the gentlest of soothing breezes, a blue, blue sky, the exultant happy notes of all kinds of birds and flowers wherever man has cared to plant them.

And a languor of delicious sense of ease steals over one and thus one can partly understand the indolence and slow going habits of the southern people.

I tried to glean some information that would interest the horticulturists of Wisconsin, but on a short trip one doesn't see much and I don't wish you to take all my statements as facts, for they have been gathered from many sources and we might safely apply the old adage. "Never believe anything you hear and only half that you see," for the land swarms with "an host of land agents" and they are a class unto themselves.

Still one can get some reliable knowledge by observation and that is what I will try to give you.

Leaving Chicago we passed through the broad level, black corn-lands of Illinois to St. Louis. Taking a sleeper at St. Louis we did not see much of Missouri, but Kansas appears broad and level with nothing of special interest at this season. About the only differences in scenery being an occasional cotton field and the plodding mule teams. Reaching Oklahoma and continuing south through what are the allotment lands the country is more broken in places but with little timber except near the streams, which timber is mostly oak on which that parasitic

growth, the mistletoe, appears green and bright. The country does not appear "enchanting fair" here as the farms are mostly run by poor people and negroes and the homes are unlovely in aspect, being unpainted shacks with no trees, shrubs or flowers to relieve their desolation.

At the thriving town of Muskogee we stopped and visited a forty-acre apple and peach orchard, the first of note that we had seen. It was in fairly good condition though not properly cared for, and the past season had yielded two thousand bushels of fruit, mainly Gano apples.

The season had been an unusually dry one and peaches and corn had failed but in a favorable year they gather peaches from May to October. The manager of this orchard showed us samples of his two crops of Irish potatoes which we had been told could not be grown and kept. They looked well, though small, but it is a fact that the southern grown "Murphys" do not taste as good as our home grown product and northern potatoes command a high price.

At Muskogee we received the first inkling of a milder climate as the day was warm and sunny and the gardener at the hotel was setting out bulbs and pansies for speedy blooming.

The southern part of the territory is partly covered with timber as is also northern Texas, oak, some pine and the false holly bushes where berries gleam cheerily through the timber. Here also as in Illinois and Kansas are seen the osage orange hedges, in some places the trees dropping their bitter, yellow fruit.

The Red River forms the northeast boundary of Texas and just across the lines on the M., K. & T. route is Denison, an old established city where we laid off and experienced our first acquaintance with a Texas "Norther."

The people of Texas grow tall and stalwart and it needs such to keep their feet in the breast of such a gale. The local paper of Ft. Worth, 25 miles distant, said that never before in the history of the local weather bureau had so many miles of real wind passed the station as on that Saturday and Sunday, the storm attaining its greatest fury at points in Oklahoma. We encountered high winds afterwards in all parts of Texas except the coast districts. They are disagreeable to say the least and a sore point with many of the Texans.

While at Denison we visited the nurseries of L. V. Munson & Son and the Texas Nursery Co. at Sherman, a nice town, ten

miles distant, connected by trolley. We found them in the midst of their packing season which continues till March 15th.

Munson is a grape man, especially and his hybrid "post-oak" varieties are recommended throughout the state. These nurseries carry apple, pear and peach in addition to the semi-tropical stock and the evergreen honeysuckle and Magnolias give an air of life to the fields that is absent in the stark, bare plants of the northern states. Here canna and dahlia roots live over the winter in the ground, but roses kill back just as in Wisconsin. There is much more fruit in this section and at Whitebro there is a 500 acre apple orchard just coming into bearing.

We journeyed west from Dallas and Ft. Worth, two of the largest cities of the state, to Abilene, which is on the edge of the elevated plateau and in the semi-arid belt, almost located in the geographical center of the state. This is a day's journey through a most barren tract of rocks, sand, cacti, sage, bush and mesquites.

But we emerge from the waste lands about thirty miles from Abilene and come upon a better looking country while the city of Abilene itself is a clean, hustling little place with many beautiful homes.

The State Horticultural Society and Nut Growers Assn. held a joint mid-winter meeting there and while the attendance was not large, there was much to interest all present and a good exhibit of nuts, fruit and garden truck. Most of the apples were from outside the state, but southern Texas presented some fine Japan persimmons, kumquats and oranges. The improved Japan persimmon is as large as a peach, looks like a plum and to my hostile northern palate tastes like raw pumpkin smells, though there are others that differ with me. The largest and most interesting stand was of seedling soft-shelled pecans. They are hardly recognizable with the hard-shelled red nuts we buy in the north. This nut grows wild along the river bottoms, the tree being similar to a hickory, rather more loosely branched, growing tall and well shaped if allowed room enough. The seedling tree bears at about 15 years, but the propagators top work the trees and they bear in eight or nine.

The improved nuts are worth 25 cents a pound and about forty pecans make a pound, trees yielding from one to four bushels. They have a shuck just like the hickory nut, but are almost all solid meat.

Much time was taken at the meeting in demonstration of budding and grafting, but to go into details concerning this would be tiresome.

This section was new and the fruit industry is only at the beginning, yet even with their light rainfall apple, pear and peach thrive and one five-acre, two-year-old peach orchard we visited was as fine as could be seen anywhere. This was an experimental orchard of the Abilene Nursery Co.

Besides this they were experimenting with grapes, plums, shrubs, roses and all kinds of nursery stock in other plats that people might see what could be grown to advantage there. The president of this nursery company, Mr. Batjer, told us that apples and grapes were affected by root fungus in that immediate section but the high altitude kept the pear practically free from blight.

The people there seem to think that the section has a bright future before it in the fruit industry, and the "25,000 Club" was booming Abilene for a little more than it was worth we thought.

Here, as in most other Texan towns, were seen the cotton warehouses and the many bales of cotton strewn around.

Continuing south to Galveston we here first saw the flowers in bloom in abundance, yet they had had a hard frost a few days previous which was unusual for them.

The flowers grow to perfection in these coast sections throughout all but a short period of dry hot summer. The plants are never retarded in their growth and lovers of flowers may here revel to their hearts delight.

A flower of commercial value is the Cape Jessamine. These waxy fragrant buds are shipped to all points of the U. S., having great lasting qualities. A moderate sized bush bears about seventy-five cents worth of buds a season.

Between Galveston and Houston lie large tracts of rich low-lands which are being developed into the garden plats of Texas. Here will grow most anything the sun smiles upon, Satsuma oranges, Magnolia figs and garden truck taking the lead just now.

But the farmers have much to contend with in the lack of drainage. Strawberry growing has proven very profitable, the berries being ready for picking about February 1st in a favorable year.

Much of interest might be said of the city of Galveston, that island city connected with the mainland by one R. R. track only, to which all lines converge. When one thinks of the "flood" or the "great storm" as they call it there, one hesitates a little, but there are no pessimists in Texas. All are hopeful and inordinately proud of their state and well they may be.

You can find all kinds and conditions of soil in Texas, sand, clay, and black muck and also every shade of these three; and all kinds of climates from the "Norther" to the tropical atmosphere of the southern coasts; and all kinds of people and no one can realize the size of the state till called upon to pay a fare.

From Galveston to San Antonio is a moderate run and this city is well worthy of a visit, being very healthful and delightful in climate and the most historic spot in the state. Here are situated six old Missions and the famed Alamo, the "cradle of Texas Liberty." Here were waged many of the conflicts for supremacy between Mexico and Texas, and the beautiful San Antonio river winds in and around the city making it very picturesque. Here are located hot sulphur wells that are much used by resorters and claimed to be as helpful and beneficial as the "Hot Springs" of Arkansas.

The live oak tree grows here in little groves and one is reminded of the sombre lines of Langfellow's "Evangeline."

"Great oaks bordered the river from which garlands of Spanish moss and the mystic mistletoe flaunted."

A hundred miles south of San Antonio lies Victoria with an altitude of 88 feet, from which place I have indited this message.

Victoria is high enough to be away from the baleful influences of the very lowlands and yet it receives the invigorating gulf breezes.

Here were seen beautiful roses blooming on bushes like lilacs in size, oranges in bearing and lemons, ripe strawberries and fertile fields that await only development.

And the genial manners and generously expressed kindness of all her citizens warm our hearts towards Texas and we join heartily with her staunch admirers in saying:

"We are proud of Texas—her resources are unlimited—come and see."

And thus endeth the message.

WOMAN AND HORTICULTURE IN THE FARM HOME

MRS. JOS. TRELEVEN.

Webster tells us that a horticulturist is one skilled in the art of cultivating gardens and horticulture pertains to a garden, he does not specify that it applies to the orchard alone, but to the garden, so it must include the vegetable and flower garden. There is much expressed in the words Farm and Home and I ask what is more to the farm home (aside from good parents and good children) than the orchard, vegetable and flower gardens. With Americans the home idea is not wanting and our home associations are very dear to us, the thought of giving them up grieves us. The farm home is a place where loving natures find opportunity for activity and development, for rest and comfort, when troubled and weary, and for sympathy when sorrowing or rejoicing. The place where true character has birth and education, the nursery of the best life this earth affords.

Gardening or soil culture in the widest sense of the word includes a hundred or more pursuits that call for the thoughtful brain. There is no employment which demands a closer observation nor so fine a sense or more infinite knowledge than the life, growth and habits of fruit, flowers and vegetables. What can be more interesting than a careful study of there revealing to the heart the riches of the vegetable kingdom and watching the growth and development of all life in this great kingdom.

Tilling the soil is one of the most honorable, healthy and desirable pursuits vouchsafed to man. The love of flowers, fruit and vegetables is essential to the highest success. Of all places of man's activity the farm is capable of the most beauty. It is a place for toil but is also an opportunity for the display of taste. The farm is cultivated primarily for profit, for a living. But man does not live by bread alone, he is not satisfied with mere profit, he is an admirer of the beautiful. A farm home is not made so by the labor of a day, a month or a year, but by a continuous effort year after year and certainly the wife and mother ought to be the co-workers in this honorable labor. At the beginning of time man was placed in a beautiful garden and

woman also to be a helpmeet for man. This was the first instance of woman in horticulture and from that time until the present we find women engaged in this work. In these days when year by year woman is demonstrating her equality with man in mental power, executive ability, and business capacity, when women are undertaking so many vocations which were merely pursued by men only and in fact there is scarcely any profession or employment which woman has not attempted with more or less success. Why then is not horticulture a suitable occupation for women? A woman's life began in a garden and history tells us that from the most primitive days of the race, to the present state of civilization, in all lands, woman has been found, either for profit or enjoyment in a garden. Conservative ones among us are still prone to think that for a woman to work outdoors is nothing more or less than a crime, but sensible people are fast coming to the conclusion that there is no reason in the world why the delights of growing flowers, fruits and vegetables should be barred from her (providing she has not too much heavy work to do and has some one to assist her with the digging). A woman can become as accomplished and oft times a more intelligent gardener than a man; and in many countries you will find gardening schools. America is far behind Europe in this respect.

Germany led in this impulse many years ago, and for thirty years horticulture has been a part of the public school system in Sweden. In France there are thirty thousand gardens connected with schools and no teacher is employed who is not able to teach horticulture. In England gardening has become so attractive an occupation to women that some celebrated English horticultural colleges have opened branch schools where they are fitting themselves for professional gardeners.

The average woman is either a bread winner or a home maker, and if horticulture does not appeal to her from a commercial standpoint then the privilege is hers to use it as a means to elevate her home and to educate her children. Household duties should not absorb all the time and strength of the wife and mother; but wherever possible she should secure the rest and enjoyment that is obtained from a change of thought and scene. Educating the child from nature, how can it be better done than on a farm, in the orchard and garden, teaching them to think, instilling in their mind a love for the beauties

of nature. It is a joy to toil among shrubs and flowers and even in the vegetable garden they are constantly drinking in the health and buoyancy from their surroundings. When they are taught to grow their own fruit and flowers they are learning to love nature and it is well known that the early impressions are lasting and many of the older ones will remember instances of childhood, easier than those of maturer years. It is said that a child character forms from the time he is eight years old. It generally develops on the mother to give much of the early training and it ought certainly to be in the power of a sensible and educated mother, to inspire within that period, such taste as shall nearly decide the destiny of the future man or woman. In a cultivation of a love for the pure and beautiful the influence of horticulture cannot be overestimated. The birth place of a great many of our best songs and poems was in some farm home. The influence of these live on and to horticulture should be given the praise. The birth place of many of our great and noble men and women was the farm home and horticulture entered very largely into their early training.

The beauties of our city parks, country homes and many of our farm homes are due to horticulture. If horticulture entered more largely into the makeup of our farm homes their value and beauty would be much enhanced and more homes would be better and happier. The women ought to be the ones deeply interested in this.

In local horticultural societies where they flourish it has been and is largely due to the work, influence and zeal of the women. In our state society, while women have been in the background and have not appeared in a public way, yet much of the work, influence power and achievements of the society might be traced directly or indirectly to the wives and mothers of leading horticulturists.

Let us give all honor to horticulture. To the men in horticulture, to the women in horticulture and to the farm home.

FRUITS FOR THE GARDEN; AND SOME WAYS OF
PRESERVING THEM.

Mrs. M. S. KELLOGG, Janesville.

This subject is one of vital importance not only to the women on the farm but to the men also, for as the old saying goes, the way to a man's heart is through his stomach, and if you fail to have that to please the inner man the outer man is apt to get crusty and cross. In the limited time to be given to this subject I shall give you a few thoughts about the different classes and varieties of fruit, and some of the best ways I have found to prepare them for the winter's use. My experience has been more varied than the average farmer's wife and the varieties mentioned are the ones that have proven the most valuable from among the long list of varieties that I have had to experiment with as the wife of a nurseryman and fruit-grower.

Everyone should have a fruit garden and in it should be found strawberries, raspberries, currants, blackberries, gooseberries, cherries, grapes, not to mention apples, crabs and plums. Those living in towns and cities will of necessity be limited as to size, but the farmer should have a large garden and if it is properly planted and carefully tended it will prove the most profitable part of the farm. Those who are limited to small area will find the varieties mentioned here to be the ones best suited for general use from out of a long list of varieties, some of which are good and some are good for nothing.

The tired and overwrought housewife from the hot kitchen where her time is spent most of the day, a few minutes spent in the garden among the berries, keeping down the weeds or gathering fruit for the evening meal will rest the tired body and put the worn nerves back into trim to take up the burdens again with renewed vigor and courage.

The fruit that holds the place of honor, not only in the garden but in the winter's preserves, is the strawberry, the first to ripen, the most welcome arrival and the one which causes the most regrets when it is gone. From among the more than hundred varieties I have been privileged to choose, the Dunlap stands queen of them all, in size, color, flavor and ease of preparation for use. Clyde and Warfield stand second, the former of size and firmness, the latter for color.

In canning all fruit do not make the mistake of waiting until

too late in the season when the fruit is apt to be dry and seedy or past its prime. My method for strawberries is as follows: After the berries are hulled add one-half pound of sugar for each quart of berries and allow them to stand over night if possible; by this method of treatment the fruit absorbs the sugar and retains its shape in the can much better than if cooked immediatey. Six quarts of fruit will need to be cooked about 30 minutes and larger quantities in proportion. For strawberry jam use three-quarters of a pound for each quart of berries; chopped well and mixed with sugar, put on and cook slowly until they are thick. This is not so sickish sweet as when used pound for pound and appears to be better liked.

Raspberries. Take the Cumberland black raspberry fresh from the boxes and pack them into the glass cans, about a quart and a half of berries to a quart can; then place them in a steam cooker if possible, if no steam cooker is at hand use a boiler, filling with cold water to about three-quarters of the height of the cans. It is best to place a board in the bottom of the boiler to set the glass cans on. While the berries are cooking put on one cup of sugar for each can of berries in a kettle with water enough to cover it and let dissolve. When the berries are done, which can be readily determined by running a straw or a fork through them, take them out, being careful not to expose them to a draft, or cool too quickly, fill the cans with the hot syrup and seal at once, being careful that all are air tight. Raspberries prepared in this way will taste the most like fresh berries of all ways I have ever tried. Of the red varieties I prefer the Loudon or Cuthbert as they retain their shape well. For red raspberry jam take any variety of good quality and prepare the same as for strawberry jam.

Blackberries. I use the Ancient Briton, using a cup of sugar to each quart of berries, with a little water in the bottom of the kettle to prevent them from burning at first; cook until they are easily pierced with a straw, sealing up hot. This same rule applies to cherries, currants and gooseberries. For peaches and pears make a syrup of sugar and water and cook fruit in this syrup until done, filling the cans with the hot syrup.

Plums. The easiest and quickest way and saves standing over the stove in hot weather, is to wash fresh plums, scald in plenty of hot water until the skin cracks a little and seal while hot. In winter, whenever you wish to use them, turn out in a

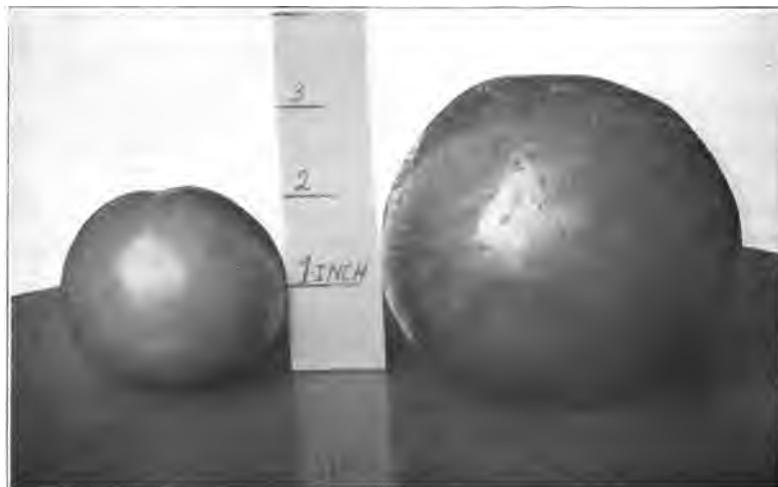
kettle (removing the pits if desired), add a little water and a lump of soda as large as a medium sized hickory nut to each quart of fruit, then boil up at once, then add sugar to took like preserves. This rule is especially applicable to those varieties strong in astringency. Another favorite method is to prick the plums with a silver fork and cook in a syrup made of sugar and water until done and seal up hot. For this latter method the Surprise plum excels all others. If one has a limited number of plums and wishes to make them go as far as possible, cook until they are about half done, strain off the juice, add one pound of sugar to each pint of juice and boil down for plum jelly; then take the plums and put through a sieve, leaving nothing but the skin and pit; for each quart of pulp add one and one-half cups of sugar and cook until the sugar is thoroughly dissolved and seal up hot.

Those whose garden is limited as to size will find the Surprise, Forest Garden and De Soto plums as eminently satisfactory for all purposes. The Early Richmond cherry, Wilder currant and Downing gooseberry all head the list in their respective classes. If the price of sugar is high, and this is often the case at canning time, currants, gooseberries and cherries may be canned without sugar, and the sugar added when fruit is used. For pies especially cherries canned without sugar are much more preferable.

There are as many different ways of canning fruit as there are people and there will be until the end of time; to give them all here is impossible. The receipts here given have proven their reliability by years of use, and I hope what has been said will be of benefit to some.



Weeping Willow, a native of Wisconsin.



A further demonstration of the value of cultivation of orchards over sod culture. Northwestern Greening apples, fair samples from two orchards, season of 1907. The one on the right from cultivated orchard, the left from sod orchard. The orchards separated only by a highway. All conditions, except culture, similar.

PRESERVING FRUITS.

A. C. BENNETT.

About forty-two years ago I took my first lesson in the putting up of apples so that they would keep far beyond the ordinary method. I carefully picked the apples and placed them on the top of about ten inches of dry oat straw on the double barn floor where they were left to dry for several weeks in the shade, and where no rain could touch them. When I came to barrel them I noticed that some of the apples had wrinkles on their skins. I put some of these apples into my cellar and sold the balance at \$6.25 per barrel to my brother-in-law who was retailing apples in the east. The apples saved for my own use were kept in an ordinary cellar, and showed keeping qualities far beyond anything I ever saw before, and my brother-in-law reported in the month of May, that he never handled such good keeping apples in all his life, that he had some barrels left that were perfectly sound and were never put in cold storage.

In 1893 at the World's fair in Chicago, I noticed the large columns of lemons that were such an ornament to the Horticultural building, and I noticed that they did not rot. I asked the Californian in charge of them how it is that their lemons do not rot? Do you coat them over with white wax, or anything, to preserve them? He replied with a smile and said, "No, they are the natural lemon just as they grew," but he said, "Those of us who understand our business put them in shallow trays like these and just dry them a little, then they will keep, but they don't all do it, they haven't all got onto it yet. Before we did this we used to ship them in iced cars to Chicago and then they had to be sold right off and we often suffered heavy losses on them. Now we save our icing bills, which is quite an item, and the goods don't have to be sold till the market price suits us."

When I went to California seven years ago I found at Riverside a man by the name of Graceland who had printed a little book, and he made me a present of it. He is one of the directors in the Southern California Fruit exchange. This book explained his method of curing lemons so they would keep a year, and gave as his reason for printing the secret that he had

found while he could sell all his cured lemons for more than his neighbors, yet his own product was too small to advance the general price, and that by giving to all a chance to share in his discovery they would all get even better prices than he had been getting. He said before the lemons of California were cured that Sicily lemons were being sold in San Francisco at much higher prices than the California lemons, because they kept better. In Sicily I learn that the lemon is never picked from the tree until it is cured on the tree by leaving it several days when there has been no rain.

Mr. Graceland's method of curing and keeping lemons was to build a square house, with lime plastered walls, inside and out, with a single door for entrance. Outside of this is another building entirely surrounding it, four feet wide with projecting roof for shade, and thoroughly ventilated. In this space the lemons are first placed in shallow trays and thoroughly cured, then removed to the inner building where they will keep a year. I have a cluster of four oranges on a single stem clipped from the tree in California seven years ago, and they are sound to-day, they were simply hung up and dried whole.

We boil down syrup until it is thick and enough to keep. The honey bee does not seal over the fresh honey until it has dried out. Dr. Clark, of Los Angeles, who has a peach orchard, told me that when they irrigate the peach orchard, that for several days after the water has been put on, the peach absorbs so much water that it is insipid until the ground is dry again. The thickening of the juices of the fruit by evaporating of the water not only dries up the stem and retards the entrance of air into the fruit, but it retards the circulation of the juice within the pulp of the fruit, which continues to go on circulating to perfect the seeds within, and the slower this circulation the longer the life principle is maintained. Cold, dry air also retards this circulation, but if made too cold the circulation stops and the fruit is dead, and when warmed up soon goes to decay. Tomatoes may be picked too green so that their seeds will not germinate if removed. But lay the tomato up in the sun and they will soon color up on the outside and mature the seed inside.

Pick the fruit for shipment before it is fully ripe, dry the surplus matter out of it, concentrate the juices to help exclude air, and retard their movement within the fruit, for when the

seeds are matured in most fruits the pulp has served its purpose and is ready to go to decay. Keep the fruit alive as long as possible and thereby retain its flavor.

In the fall of 1901, I sent my daughter a crate of well cured Jumbo cranberries. In the fall of 1902 she sent a small box of them to me in Florida to show me how well they had kept over a year. I had put them in my writing desk in a warm room where they remained until the spring of 1903 when I sent a few of them to J. A. Gaynor, of Grand Rapids, Wis., to be planted on the experiment station, and the balance were sent to Cameron, Wis., to be planted on my marsh there and they came up nicely.

IN MEMORIAM.

J. J. MENN.

Through the death of J. J. Menn the Wisconsin State Horticultural Society has suffered a loss which is keenly felt by the members who became acquainted with him during the years of his active work with the society. His bearing towards his brother members was always kindly and cordial and his pleasant smile, cheerful words and hearty greeting will be sadly missed at the meetings of the society.

He was able to see and appreciate the best in others and his presence was promotive of good will and cordiality.

Mr. Menn was an enthusiastic horticulturist yet always practical and his advice and counsel were received as given by one of good judgment based on experience. His orchard plantings were of considerable extent but I have not learned of the number of acres. Within a few years Mr. Menn brought to the attention of our State Horticultural Society a seedling apple of more than ordinary promise and it is desirable that our society shall see that its merits are not overlooked.

My first acquaintance with Mr. Menn commenced a number of years ago when he addressed our Sauk County Horticultural

Society on the subject of apple culture and the good opinion of him then formed has been sustained by the years of acquaintance which have followed.

Jacob J. Menn was born in the town of Roxbury, Dane county, Wisconsin, October 13th, 1854. A year later he moved with his parents to Monroe county and that county has been his home ever since. On November 13th, 1879 he was united in marriage to Frederica Dreler. Seven children were born, who are all living, Mrs. Klingelhofer who was known to members of this society as Miss Eva Menn, Benjamin and Elmer of Virginia, and Cora, Harvey, George and Myrtle who are at home with the mother in the town of Sheldon.

Mr. Menn was a man of considerable prominence in county and state affairs. For years he was chairman of the town of Sheldon and a commissioner of the poor under the old system. He was president of the local co-operative creamery which he had helped to establish and was a successful dairyman. He was prominent in church work and an active church official. He assisted in taking charge of the Wisconsin fruit exhibit at the St. Louis Worlds Fair and for a number of years was a member of the executive board of the Wisconsin State Horticultural Society.

Mr. Menn returned home sick from the annual meeting of the Wisconsin State Horticultural Society last February and for some time seemed to be slowly recovering. In a letter which I received from him dated April 4th, 1907, he mentioned that he then suffered from rheumatism but was quite hopeful for the recovery which seemed to be slowly progressing until Tuesday, May 7th, when he suffered a relapse of his long siege of sickness and died Wednesday, May 8th, 1907.

Wm. Toole.

A. P. WILKINS.

A. P. Wilkins died May 27, 1907, aged 61 years. He was killed by a stump machine, following behind the team, the clevis pin flew out, the sweep knocked him down, and the next time it struck him in the head killing him instantly.

He was a man of honorable repute, a highly accomplished musician, beloved by all, a worthy member of society; he leaves a wife and one daughter.

These facts were given by his Pastor, Rev. R. W. Besworth.

GEO. J. KELLOGG.

REPORT OF COMMITTEE ON RESOLUTIONS.

GEO. J. KELLOGG, Chairman.

The following resolutions were reported by the committee and adopted by vote of the society.

The Wisconsin State Horticultural Society in annual convention assembled, realizing what has been done by other state universities in promoting the study of plant diseases and providing remedies for the same, would respectfully ask that our representatives in the next session of the Wisconsin Legislature be and are hereby requestd to introduce a bill to establish at the Wisconsin University a Chair of Plant Pathology with such provisions and duties as may best serve to put our farmers and horticulturists in possession of the best methods of combating the diseases and insects to which the ordinary plants of cultivation are subject.

(Endorsed by Executive Committee and adopted by Society.)

Whereas our esteemed veteran F. K. Phoenix of Delavan, the oldest honorary life member in our society, who is feeble, now 83 years of age and unable to meet with us!—Resolved that our secretary send him a letter of congratulation.

Mr. Geo. J. Kellogg: Now, I would like to read a little obituary of a man that is not dead. I believe if we have anything good to say of a man, to say it before his death. Two weeks ago I had the pleasure of visiting F. K. Phoenix of Delavan, in his home. On the 3rd of March he will be eighty-three years old. Though he is quite feeble, he is able to walk out, and he walked with me eighty rods over to the old nursery

grounds. It is rather difficult for him to talk, as he has to gasp for breath, but his mind is as clear as it was sixty years ago. I have his signature to go into the volume in connection with the resolution. He has spent his life in horticultural work, the greater portion of it was spent in Illinois. He came west in 1837, I think it was, with a half bushel of apple seeds from western New York. He planted them, went back east and stayed two years in school, came out west and started a nursery. He worked at Delavan till 1854; he was discouraged with the ravages of the oyster-shell bark louse in the orchards of Wisconsin and he went to Illinois where he spent a great many years. At one time he had 600 acres of nursery in Illinois and he had over 400 men in his employ. He is the oldest of our members, and I will now read the resolution.

Motion to adopt resolution carried.

Whereas we all know of the valuable work C. G. Patten of Iowa is doing for the northwest:—Resolved that the president of the W. S. H. S. appoint a committee to confer with Iowa and Minnesota committees to procure some substantial aid in furthering this valuable work. (Adopted)

Office of the Mississippi Valley Apple Growers Association,
Quincy, Ill., Feb. 3, 1908.

To the officers and members of the Wisconsin State Horticultural Society.

Gentlemen:—A genuine interest in all departments of horticulture prompts me to send hearty congratulations to your annual meeting, and earnest wishes for a most harmonious and profitable session.

One of my chief reasons for presuming to send a communication to your worthy organization is to call your attention to the fact that resolutions approving of, and heartily sanctioning the movement, of having the third Tuesday of October observed annually and perpetually as National Apple Day have been adopted and spread on the records of nearly all the national and fruit dealers societies in the United States, and also nearly every state in the apple belt.

The movement was originated, and set in motion three years ago, the New York State Fruit Growers Society being the first

body to give tangible form and shape to the measure by adopting resolutions in its favor. In the passing of three brief years, the most casual observers have seen the great benefits conferred in pressing the wholesome food in more frequent use upon family tables, and in holding the educational features of apple culture in the most attractive and useful light before the people.

Possibly your society has passed a resolution in perfect harmony with expressions of countless kindred organizations in the country. If it has not done so will you kindly take the matter into consideration at the present meeting, and pass a simple resolution announcing approval and co-operation.

I wish also to call your attention to the fact that there has been a concerted movement in favor of making choice of the apple blossom for our national flower. As you well know, we have not at present a national floral emblem. Aside from the apple blossom, the only flowers proposed for the position are the Goldenrod and Columbine. About all that can be said of the goldenrod is that it is a poisonous weed, noted for its peculiar fitness in spreading hay fever; and as for the columbine its suggestion for the place specified seems to have had its source in a sickly sentiment. It should be obvious that in making choice for a national flower we should take a blossom producing a great American fruit, one which makes its force felt at the opening of every season, as it can be plainly seen that it forecasts conditions not only affecting a very important part for farming industry, but also reaching with important bearings through many countless commercial circles.

Hoping that I may be pardoned for this intrusion upon your deliberation, and that you will kindly give expressions that will be in perfect accord with the numerous national, state, district and county organizations that are now working earnestly for the elevation of the apple blossom, I beg to remain with the most cordial and kindest regards,

Yours truly,

JAMES HANDLY,
Secretary.

Resolved, That we concur with the Mississippi App'e Growers Association in recommending that the 3rd Tuesday of October be observed as apple day and further we recommend every ap-

ple grower to supply every member of his family an apple each and every day until strawberries are ripe.

Resolved, That we agree with the Mississippi Valley Apple Growers Association in recommending the apple blossom as our national flower.

(In connection with this resolution a motion by Mr. Toole was carried that our native crab apple blossom be recommended as the state flower.)

Resolved, That exhibits of fruit competing for premiums before this society shall include only such as have been grown by the exhibitor excepting county or other collections of which special mention is made in the premium list. (Adopted)

WHEREAS, good roads are necessary for the successful carrying on and extension of the business of horticulture and general farming in Wisconsin, and

WHEREAS, good roads in all foreign countries and in the progressive states in this country have only been constructed through the aid of the state governments, and

WHEREAS, there is submitted to the people of this state for their adoption, a constitutional amendment making possible the granting of state money to help pay for county roads.

THEREFORE, be it resolved that the Wisconsin State Horticultural Society urge upon its members and the people of the state as a whole the adoption of this amendment, and believes that its passage would result in bringing about the more rapid construction of both roads and bridges. (Endorsed by Executive Committee but due to oversight not presented to Society for adoption.)

Resolved, That the Wisconsin State Horticultural Society in convention assembled, favor the passage of a national law for regulating fruit packing and packages;

That it co-operate with the legislative committee of the national commission to that end;

That each member of this Society enlist the aid of his senators and representatives in Washington for the purpose of securing the enactment of such a law and that these representatives and senators be advised of the passage of this resolution.

(Passed at Summer Meeting, Shiocton, Aug. 28th, 1907, ed.)

REPORTS FROM LOCAL SOCIETIES.

REPORT OF MADISON HORTICULTURAL SOCIETY.

(Organized in 1847.)

E. T. MISCHE.

The organization of the Madison Horticultural Society antedates that of our State Society by some years. Thirty to thirty-five years ago Madison was the objective point of a notable array of personages drawn hither from the whole Mississippi valley to revel in her cool breezes, bask in the warm sunshine and contemplate its enchanting scenery.

European royalty then as now, were deeply interested in the pursuits of gardening, it was a delightful privilege rather than an onerous task to work in the garden. Subjects no less than monarchs themselves indicated a pride in and knowledge of gardening truly remarkable. Small wonder then that the last generation in this country composed as it so largely was of European born and reared element should endeavor to bring with them the acquired tastes and habits of their recent homes. That was a period when Daniel Webster found pleasure and honor in dividing attention between steering the ship of state and broadening and extending the great Massachusetts Horticultural Society, when such men as the elder Parsons, George Ellwanger, Patrick Barry, Thomas Meehan and Mr. Prince were founding the prototype of our commercial nurseries of today.

But the country was new, old world ideas required adaptation, some eliminations and newer ones applied. Most of all the general scramble was for existence—a state always preliminary to advanced horticulture. Hence the pursuit of horticulture was largely confined to grandmother's efforts in tending a door-step garden of old fashioned flowers, or it was purely a commercial enterprise for the rearing of fruits and vegetables.

In the past decade or two our nation has experienced a remarkable prosperity and each year the general populace have means and leisure in greater proportion than heretofore. All this makes for comfort and pleasure and is directly reflected in the share of interest held by horticulture.

Madison is quite typical of this general state of affairs. After a quiescence of some 25 years its Horticultural Society was renewed and each year since has its function broadened and extended.

During the past year the Society's efforts were directed toward the extension of aesthetic horticulture.

With a view to rejuvenating the love of the beautiful, characteristic of our forbears, to spread by contagion the wholesome pastime of cultivating a garden and an intelligent appreciation of the horticultural good things in life—our society planned to crystalize into a working force the diffuse ingredients that together make up horticulture.

Believing that every window displaying a geranium in a tin can, every yard that has turf or flowers or vegetables is overseen by an influence from whence the stability of horticulture springs. Plans were laid to enlist the coöperation of all such to a greater, a combined, and a more telling effort.

Fortunately there was evident the unmistakable sentiment of about a thousand residents who for some fifteen years have been the main stays of the Park & Pleasure Drive Association, and who by voluntary contributions create an annual fund of about \$10,000 to carry on the beautification of city and country side. Interest in things beautiful is widely and very generally evident in Madison's citizenship. Our society felt that by crystalizing this diffused interest and giving it an opportunity to express itself in other ways than merely financial contributions would be to the benefit of all concerned. Toward that end the effort was to find just how general and to what extent the general public was interested.

Membership fee in the society was one dollar per year and all members who so desired received a box of annual plants at the proper planting season in the spring. These plants comprised a collection of one hundred of the showier sorts of flowering plants, such as aster, zinnia, etc., also ten gladioli, cannae and one dahlia. A local florist entered into an agreement, to germinate, to transplant, box and deliver to the urban residents

all those contracted for. About one hundred and twenty-five boxes were disposed of. So far as the society is informed these plants gave general satisfaction.

A purse of \$75.00 was formed as a prize fund to be distributed for greater improvements in yards. The first was \$25.00, two were \$10.00 and six \$5.00 each, in addition three received honorary mention for the inherent beauty of the grounds. One of the local newspapers espoused the propaganda as its own, conducted the judges over the routes several times, announced the awards and issued a supplement of general interest to the community.

A floral exhibition was held in mid-summer and in artistic arrangement and high quality of material displayed was exceptionally good.

Throughout, the intent was to avoid spreading an effort over too wide a field but instead to feature one or two points and the result has been exceedingly gratifying.

And what, it may be asked, is to be gained, what is meant by the society and what does it expect to accomplish? In answer it may be stated that it exerts one of those silent yet none the less sure and direct influences that breed nobility in life. It quickens the perceptions and significance of the beauties of nature; it is a purifier of mind and surroundings, introducing wholesomeness in the accompaniments of everyday life, the house, the yard, the street, the city, inside and outside. It is the means of sounding the depths of natures laws, in echoing melody of poetry in sky, earth, vegetation and man's handiwork—wherever nature plays a part, horticulture has its counterpart if we will but see it.

To induce a greater, more intelligent, profound and nobler desire in the breast of workaday men, to participate in the pleasures and beneficence of life is assuredly worth while.

The practical application is directed toward bringing the interested ones together and by preachment and demonstration, disseminating information as to means of development.

The trend of the society's efforts are toward a high class development of home estates, general approval of civic authorities toward a substantial and aesthetic municipal construction and an enlightened, progressive and beautiful city generally, be that gained by whatsoever means as within our financial capacity, is possible.

ANNUAL REPORT OF THE LAKE GENEVA GARDENERS AND FOREMENS ASSOCIATION.

HENRY WM. ILLENBERGER.

Mr. President, Ladies and Gentlemen of the Wisconsin State Horticultural Society:

In this, our Third Annual Report of the Lake Geneva Gardeners and Foremens Association, we have much pleasure in offering to you a synopsis of the results of another year's work.

Under the guidance and instruction of such a board of managers, and the co-operation of a large membership, such as the Lake Geneva Association has, we cannot help but succeed.

The first thing in producing wealth and success is the raw material, which is worked up into the requirements of mankind, and which is supplied by nature, under the skill of the practical gardener.

As soon as an obstacle presents itself, it is at once set upon by an ingenious and persevering bunch of gardeners, and annihilated in its initiative.

The officers for the current season include:

President—Wm. P. Longland.

Vice-President—A. Reupke.

Treasurer—H. Wm. Illenberger.

Secretary—Alb. Meier.

with a standing or executive committee of five, on whose shoulders have fallen a very important share of the work.

Our transactions during the current year have amounted to more than \$1,000.00, and our treasury at the present time shows a balance of \$300.00.

The expenses of the Association are mainly for flower and vegetable exhibitions, horticultural speakers from all parts of the country, delegates to other societies, excursions educating school children in the art of Floriculture, and all other matters pertaining to the interest and general welfare of the Association.

Since commencing the present season, we have held 18 regular meetings, and 5 special, with an average attendance of twenty-five.

The purpose of our meetings are to further the interests of gardening in all its branches. Papers are read on Horticultural

subjects at each meeting, and the discussions which follow are usually of more importance than the paper itself, each member contributing his experience in determining the real worth or worthlessness of any particular part of the subject. We also have an exhibition schedule encouraging the display of flowers, fruits, and vegetables in season at each meeting; also a short talk on seasonable hints. During June we exhibited at the Lake Forest Horticultural Society's show and was awarded a Special Certificate of Merit for the flowers and vegetables exhibited. The Mid-summer Fair held at Lake Geneva during July was a decided success, and well worthy of a visit to all lovers of Horticulture. At this exhibition could be seen rare exotic plants showing the extreme skill of the grower, collections of flowers and vegetables rarely seen in any other part of this country—each gardener trying to excel his neighbor in the gorgeousness or value of his display. The next exhibition we took part in, was the Chicago Flower Show held in November, where the Lake Geneva Gardeners made a very creditable showing. In competition with wholesale growers, our members showed their skill in taking off some valuable prizes; especially was this true in the competition of large chrysanthemum plants and the many types of single, which are now gaining favor with the flower loving public. At the school children's exhibition held at Lake Geneva in October, a decided gain was clearly visible from the preceding one; five hundred plants were furnished the children during May, and money prizes amounting to \$48.00 was awarded to the successful growers. Extreme interest was taken by the children, and it was gratifying to the parents and public in general to notice how these little ones developed an inherent love for things that are beautiful.

The Chrysanthemum Show held November 15 and 16th was an unqualified success. The support offered by the Honorary members was a leading feature. Prizes in money and silver cups were offered, and the competition was keen in every class. Chrysanthemums, of course, predominated, but a creditable showing was also made in the different classes for winter vegetables and fruits,—a feature that is gradually but surely gaining favor with the public. Growers from outside contributed to the success of the exhibition. Poehlman Bros. of Morton Grove, Ills. exhibited a splendid collection of Tea Roses, including their new rose "Cardinal." The skill of this concern in growing a high class

of flowers cannot be disputed. Julius Roehrs & Co. of Rutherford, N. J., had on exhibition a wonderful collection of orchids, including Odontoglossum Grande (The baby orchid); Vaughan's Seed Store contributed, besides chrysanthemums, their baby roses in both pink and white, grown in baby pots (Carnations from Wm. Meine, Indiana).

During the summer, the usual custom of visiting the various nurseries and green houses in different parts of the country was carried out. At least once a year, the Association visits the places in charge of the respective gardeners in a body.

Just recently, we have become incorporated.

During the past year, several of our assistant gardeners have been appointed to positions of trust in different parts of the country, which is proof enough of our high standing as a body.

During the past year, prominent horticulturists have visited us in their respective capacities, and have always met with a mutual and cordial good-fellowship. We are at all times, in correspondence with members of our profession in all parts of England, Germany, Austria and France, and always in a position to offer any information on any subject pertaining to Horticulture in its many branches.

Horticultural visitors to Lake Geneva are always welcome; a glad hand is always extended to those interested in the profession and it is not uncommon to have a nursery drummer knock at the door of a Lake Geneva gardener at midnight and tell his little tale of woe, being locked or crowded out of the hotel, and unable to find a pillow on which to pound his weary head. He is at once taken in as one of the family.

Before closing, I wish to say a few words of commendation of the Wisconsin State Horticultural Society. The untiring efforts of its officers have brought this society to a higher state of perfection than any other State Society, and too much cannot be said in praise of these gentlemen.

LAKE MILLS LOCAL.

Mr. Geo. J. Kellogg: Our secretary will make a report for the Lake Mills Society. We had a fine exhibition of strawberries in June or July, and the ladies took hold and we had a very fine display of roses. We have had two meetings since our annual meeting and a little over four weeks ago we had an election of officers. Our next meeting will be held a week from next Friday night. Our Society comprises about twenty-five members; we are in nice running condition. If it were not for the ladies though, we would make a failure. Perhaps I should say a word in behalf of Lake Mills. We are right in a horticultural country there. Fifty and sixty years ago we had half a dozen nurseries and they had horticultural meetings that were attended by delegates from Whitewater, Milwaukee and different parts of the state; they had horticultural meetings there that were A No. 1. Now, it is hard work to keep up a horticultural society. We have some of the old members, L. D. Fargo, who ran a nursery fifty years ago, and he is one of the most enthusiastic forestry men that we have, he has been practicing what he preaches in his own forest for fifty years and when J. C. Plumb was there, Isaac Atwood, J. C. Brighton and Stearn of Whitewater, when we had those men to talk about horticultural interests, why, it was just fun to have horticultural societies. There were some orchards of forty acres that produced from three to five thousand barrels of apples a year. Now, there are only a few scattering trees left on the forty acres. They had at one time up there a lot of seedlings that produced six barrels to the tree. I have been looking up the horticultural interests during the last few years, the soil is all right, if they had only kept planting them, but they let the orchards go by default. Sometimes the canker worm cleaned out an orchard, sometimes the tent caterpillar, but the early history of horticulture was far ahead of what it is now and far ahead of what it was in any part of the state.

REPORTS OF DELEGATES TO OTHER SOCIETIES.

REPORT OF DELEGATE TO MINNESOTA MEETING.

W. S. HAGER.

It was my pleasure to meet with the members of the Minnesota Society in their 41st annual session. They are as enthusiastic and genial a lot of fruit and flower cranks as are all Horticulturists. They certainly used me finely. I met many old and made many new friends, I hope.

In sketching in a small way what I saw and what was done, I judge that what the society wants is not a review of the programme, but of such things as seem of most interest to the Horticulturists of Wisconsin. While comparisons may be odious, yet I cannot help having our society in view when writing this.

The meetings were usually well attended, but, as with us, some of the members were slow getting around in the mornings. Their fruit display certainly was great. There were over 1,000 plates of apples and 32 pecks; shown mostly for premiums, although some enthusiastic growers had some fine exhibits, just to help out. One of the finest of these was made by A. D. Brown of Baraboo, and I think if he had been allowed to compete he would have carried off the lion's share in those varieties shown by him. He had a table by himself and I heard many expressions of wonder and praise for his fruits, and that by professionals.

A. J. Phillips had 30 plates of top worked apples. Chas. G. Patten had 55 seedlings of his own origination. There were 18 plates of grapes that were fine for the time of the year, and a fine collection of nuts, and specimens of wood from nut bearing trees.

As an indication of what they are doing commercially it was reported that from nine stations in Fillmore county there was shipped last season 78 cars or 12,480 barrels of apples. It seems as though they are using the same varieties that are successful in northern Wisconsin, although locality and soil seem to make some difference.

To me one of the most interesting papers was that of Mr. Elwin of Richfield who told of his plum orchard of 2,000 trees. His conclusions are; plant small trees, prune back heavily, or they will be torn to pieces by the winds. Varieties—Surprise, Hawkeye, DeSoto and Weaver. Of course I liked his conclusions as they compare so nicely with mine. He sprays, and has found that it pays to mulch for summers. Markets in 16 quart cases and would use no other.

Upon starting to their meeting I had in mind to try to see why they have larger meetings and more members than have we of Wisconsin. And in sizing up the attendance and where they came from I found that a very large percentage of them came from St. Paul and Minneapolis and immediate vicinity. In other words it is location. They have those two large cities to draw from. The same reason that makes the Minnesota State Fair larger.

There seems to be a diversity of opinion as to varieties, some thinking that we ought to propagate the best of what we have while others are looking toward selected seedlings for something better.

I cannot close this brief better than quoting one paragraph from the President's address:

"Horticulture is an art of endless possibilities and changes, and no person of experience in such matters ever feels that he knows it all. Its devotees are generally altruistic, enthusiastic and optimistic, and have no secrets. They take pleasure in helping the beginners to get started, even though by so doing they increase the competition that they themselves are destined to meet. As a business horticulture differs from most others in this respect, and yet those who succeed best in it have broadening qualities in large measure."

REPORT OF L. H. PALMER OF THE ILLINOIS HORTICULTURAL CONVENTION.

Champaign and Urbana, two cities in one, the home of the Illinois University, are very pleasantly located and presents this advantage that Illinois can send sons and daughters there with-

out having them contaminated with the saloon as there are none in either city.

There was a very good attendance of very enthusiastic horticulturists and everything was done to make your delegate feel at home. The continued frosts worked great havoc with their fruit as well as with us the past season. The Illinois Horticultural Society is subdivided into three divisions, the northern, central and southern. The fruit exhibit was divided in the same manner. The papers were fine and to the point. I was particularly interested in the talk on spraying as it seems they have more trouble from Bordeaux scald than we do in Wisconsin. Mr. Perrine will use but three pounds of copper sulphate to fifty gallons of water for the first application and after the blossoms fall will leave it out entirely. He uses arsenate of lead for a poison believing that it is also a remedy for fungus diseases. The San Jose scale is a great problem with them, but the general opinion was that the lime-sulphur mixture would keep it under control if taken in time.

Mr. Hartwell in his paper on strawberries thought it better to plough up old beds than to take the trouble to spray.

The show of fruit was fine considering the trouble they had from frosts the past season.

REPORT OF DELEGATE TO NORTHEASTERN IOWA.

J. G. BUEHLER.

As I journeyed on my way to Independence I looked in vain for orchards but I failed to see them along the Mississippi River from North McGregor to Dubuque. I saw on either side what I thought would be beautiful orchard sites. When I left Dubuque going west it was moonlight and I was of course unable to discern much of the country. I arrived at Independence at midnight and was soon at my quarters at the Gettney Hotel. It seemed that I was the first one there as I found no one of the horticultural type. I retired and I was not crowded for room.

The first thing in the morning after a hearty breakfast I went in search for the cage of my feathered tribe. I found it near the hotel. I walked in and found nobody there. I began to think perhaps I would be the whole convention and what to do with my apples but as I stepped out I met one congenial old gray-haired earth being. He looked wise and asked a few questions. I soon found out his great personality, Iowa's wizard, Luther Burbank the II, C. G. Patten. Others began to arrive and the arrangement of fruit began. I think there were eight exhibitors, one from Minnesota, one from Wisconsin. Minnesota must have eaten his fruit at home for he had nothing to show but a few shriveled up wild crabs and a quart jar with a few pebbles of lime to show that the lime was slack. Wisconsin surprised and surpassed all other exhibits in point of beauty.

An apple without a spot from scale or blemish could hardly be found. A large number of seedlings were shown but few desirable market varieties. The Silas Wilson produced by C. G. Patten struck me as the most favorable in quality and color but lacks size for a commercial seller. The Wealthy, our favorite here, seemed to be almost a failure there on account of blight. The Northwestern Greening is reported a failure in some localities, Patten Greening seems to be quite a favorite out on the prairies. The small fruit growers seemed to be quite in evidence and interested. The black currant seems to be a favorite with some as worms seem to leave it alone. No doubt the poor quality. One enthusiast claimed he could grow the currant and gooseberry bush for shade trees then cut them down for saw logs.

The prairies of Iowa did not strike me as forcibly for orcharding as the beautiful wooded hills of southwest Wisconsin. As to markets they are no better situated than we are in Wisconsin.

REPORT OF T. E. LOOPE OF THE IOWA HORTICULTURAL SOCIETY.

By courtesy of officers of the W. S. H. S. I was invited to attend the Iowa State Horticultural Society as delegate from Wisconsin. I should have been glad to skip giving an account of business but the ultimatum was to go without fail, no excuse permitted. I am accustomed to obey orders from superiors in authority and on December 9th, I started, arriving at Des Moines on Tuesday morning. I repaired to the State House at 10 A. M. and found the Society very nicely installed in a pleasant and commodious office on the first floor. They have a large library occupying one side of the room, well stocked with books and reports. The secretary, Mr. Green, greeted me pleasantly and told me to make myself at home. Later I was made an honorary member on asking permission to make a motion. At the hotel at dinner I found C. G. Patten, C. L. Watrous and Col. Brackett of Washington and enjoyed their society very much during the sessions and afterward.

The attendance averaged nearly fifty, being made up largely of middle aged men with a few younger men and fewer women. Many grey hairs and bald pates were in evidence but they were a superior body of people in intelligence and experience.

The numbers on the program were well treated and interesting, showing a good knowledge of the subject under discussion.

At the banquet on Wednesday evening we were treated to an elaborate menu and "the band played on." Civic improvement was ably and fluently handled by Hon. G. H. Van Houton who pleaded not only the beautifying of the cities but also the farms and villages of the state. Domestic Science was handled by a lady professor, Edith G. Charlton of Ames, who told the duties appertaining not only to the women but also laid many obligations on the men. She said that it was impossible to elevate the natural manners of some men and I thought her piercing Hawkeye was fastened on me, perhaps because I was a badger and was used to groveling in the dirt but I shrunk down lowly in my seat hoping no one else would see her objective point.

The subject of Weeds by Alson Secor came next and he told of many varieties of weeds and their noxious qualities comparing an illiterate empty headed man with vicious tendencies, as

having weeds on the brain. I was glad my wife was not present for she would likely tell me that I sometimes had weeds in my head instead of calling me an old fool as usual. I'd rather be a fool than weedy.

Prof. Beach told us of apples and related how he used to get up early to pick up apples from the Deacon's trees that fell over into their yard. It took him back to boyhood and altho he had been in many climes (here he looked up and raised his arms showing the kind of "climbs" he probably had made in childhood) still the memory of those apples clung dearest in his heart.

Hon. Eugene Secor told us why Adam ate the Apple and I concluded from his description of Eve in her beauty and engaging charms arrayed in living colors that he could have tumbled to the opportunity of eating a beautiful luscious apple or even any old fruit and risked getting choked on the core and always wearing it there for the gracious smile of such a maiden. I almost think I would anyway.

At this point in the program having heard a member say they would call me out I read the appropriate lines they printed on the program as follows:

"And the night shall be filled with music
And the cares that infest the day
Shall fold their tents like the Arabs
And as silently steal away"
As I stole to the depot.

REPORT OF L. G. KELLOGG, DELEGATE TO MICHIGAN HORTICULTURAL SOCIETY.

When the fruit growers of Michigan assembled at Battle Creek on the morning of December 3rd, 1907, for their annual meeting I found the state represented by a large attendance of intelligent, enthusiastic people, including delegates from Ohio, Illinois, Connecticut and New York. The veteran fruit grower Mr. J. H. Hale of Connecticut and famous as a large peach grower in Georgia was present during the entire session and ever ready to take part in the discussions. Mr. Hale is a man who has

made a life study of nearly all the phases of commercial fruit growing and is possessed of an unlimited fund of knowledge, wit and story which will cause this annual meeting one long to be remembered in the history of this society.

I am scarcely doing justice to the fine program in a short report by giving a synopsis of all the topics presented and will endeavor only to bring out a few of the most prominent features of the convention.

There was a large and interesting exhibit of apples consisting mainly of the following varieties: Baldwin, Greening, Spy, Steel's Red, Tolman, Wagner, Johnathan, York Imp., Fameuse and King, also a few plates of fine pears and quinces. The display made by the Michigan Agricultural College in charge of Prof. Fletcher and his assistants was very unique and instructive. It was comprised of 45 jars of canned fruit, 60 plates of fresh fruit, 60 varieties of potatoes and about 25 specimens of limbs, twigs and leaves covered with insect pests and fungus and showing the diseases to which the fruit trees are subject.

On Wednesday morning an invitation was extended to all of the delegates and members to participate in a trip to the Postum Cereal Plant, one of the large industries of Battle Creek. A large number availed themselves of the opportunity and after inspecting the commodious offices were invited in the dining room where a light lunch was served and the usual courtesies extended. The delegation then returned to the convention hall and took up the regular work of the program which was designated as a business session, reports and election of officers. The election of officers was very harmonious and unanimous only one candidate being presented for each office. With one exception all of the old officers were re-elected.

A unique feature of the convention was a students' fruit judging contest. About a dozen of the students from the graduating class of the Horticultural Department of the Agricultural College were present and participated in the contest. The work was done under the supervision of S. W. Fletcher, professor of Horticulture. The students were required to work from a score card, name each variety of apples and score the points in its favor. The points consist of form 15, size 25, color 30, freedom from blemish 30. Total 100 points.

Prizes were awarded in this contest and the young men showed

skill and ability, proving conclusively that they had had good training in this line of work and no doubt some of them will be called as expert judges at some of our great future expositions.

On Wednesday evening all of the members were invited to participate in a banquet given by Dr. J. H. Kellogg of the Battle Creek Sanitarium. This banquet was very unique in so far as it pertains to the menu, Dr. Kellogg being a strong advocate of a purely fruit and vegetable diet, no meats of any kind being served. The entire bill of fare being prepared from fruits, nuts and vegetables.

From the enthusiasm displayed at this convention the state of Michigan certainly has a great future in her possibilities as a fruit growing state.

I met with a very cordial reception and all of the courtesies were extended that possibly could be to a delegate from a neighboring state. I shall always have a warm spot in my heart for the members of the Michigan Horticultural Society as I feel that it was here that I met my full conversion and am ready to join the order of Knighthood of the Spray Pump.

FIELD INVESTIGATIONS IN POMOLOGY.

W.M. A. TAYLOR, Pomologist in Charge of Field Investigations,
U. S. Dept. of Agriculture, Washington, D. C.

The question that naturally arises first in this connection is "What is Pomology?" The simplest definition, and the one that would have been sufficiently comprehensive in earlier times would be that pomology is the science of fruits. That was the old definition. In recent years the field has broadened and the term pomology is interpreted to cover not only the science of fruits, including their classification and nomenclature, but the whole range of cultural, marketing and transportation problems affecting both commercial and amateur fruit growing.

You no doubt recall that our American pomology began with the description of fruit varieties published by Dr. James Mease, of Philadelphia, in the first American edition of Willich's Do-

mestic Encyclopedia, which was published in Philadelphia in 1804. That list of varieties consisted largely of sorts that had originated in New York, New Jersey and eastern Pennsylvania, including Newton Pippin, Esopus Spitzenberg, Yellow Bell Flower and a number of other varieties that are important at the present time. Following him, William Cox, in 1817, published his View of the Cultivation of Fruit Trees, the first book in America devoted entirely to fruit varieties and fruit culture. Later the writings of Thacher, Prince, Manning, A. J. Downing, Charles Downing, Thomas, Barry, Elliott, Warder and more recent pomologists discussed various phases of fruit growing. Most of these earlier writers emphasized the importance of varieties rather than of methods of culture, or of utilizing the product.

In recent years the large development of commercial fruit growing in America has made necessary closer attention and more systematic investigation of marketing and transportation problems.

The Field Investigations in Pomology of the Bureau of Plant Industry at the present, comprise the following somewhat distinct lines of work:

1. Fruit marketing, transportation and storage investigations.
2. Viticultural investigations.
3. Fruit district investigations.
4. Pecan investigations.

Under the general head of Fruit Marketing, experimental studies of different phases of the question are being made with regard to their bearing on both domestic and foreign trade in American fruits. It is very generally recognized that of many of our fruits the present plantings are likely to produce in favorable seasons much larger quantities of fruit than have ever been produced in the past. If disastrous gluts are to be avoided, wider distribution of these products will need to be accomplished, and while it is believed that by far the larger portion of most of our fruit and fruit products will always be consumed in the United States, a healthy export demand is considered one of the most important factors in preventing an undesirable surplus of fresh fruits at times. In connection with this work an investigation of the possibility of developing trans-Atlantic demand for eastern grown Bartlett pears was undertaken a few years ago.



Fig. 1.—New York Bartlett pears in 40 lb. boxes for export. (This and (4) following illustrations furnished by Wm. A. Taylor, Washington, D. C.)



Fig. 2.—A carrier of Georgia Elbertas packed for export.

It will be recalled that at that time there was a rather threatening surplus of Bartlett in the Lake Region, particularly in Western New York in almost every year of a full crop. The leading fruit shippers, including those who were successfully exporting winter apples did not consider the exportation of eastern grown Bartlett pears practicable, occasional shipments made in barrels having arrived in bad order. A series of experimental shipments in which barrels, forty-pound boxes and twenty-pound half boxes were tested under identical conditions speedily proved that while it was difficult to deliver the Bartlett pear in Great Britain in sound condition in so large a package as a barrel, it was comparatively easy to make sound delivery in boxes (Fig. 1) and half boxes. It was also demonstrated that there was active demand for this fruit in British markets, and that it yielded a good net return to the shipper. As a result of this a pear export business has developed, which at present ranges from \$250,000 to \$650,000 in value annually.

A somewhat similar condition as regards future surplus of early apples in the middle Atlantic states and peaches (Fig. 2), in some sections of the country, notably Georgia and Texas exists at the present time. Work along these lines is therefore being prosecuted. Much work is also being done in connection with the determination of the causes of deterioration of the American winter apple in transit to both domestic and export markets. (Fig. 3.) The apple is our most important export fruit. Investigation of market reports reveals the fact that out of 100,000 barrels of Baldwin apples from the United States handled by one British House from the ports of New York, Boston and Portland, Me., for a single year, more than 20% were condemned by the inspectors upon arrival at Liverpool as "slack," "slightly wet," "wet" or worse. As the Baldwin is one of our best shippers and probably constitutes about 50% of our entire apple exports in most seasons, the importance of reducing this deterioration is evident.

Under present conditions fruit growing has come to be a very complex proposition.

FRUIT TRANSPORTATION AND STORAGE.

In order to definitely locate the causes of the troubles that become conspicuous at the market end of the line, it is necessary

to determine the exact history of the fruit from the tree to the salesroom, before the responsibility for any particular decay or deterioration can be fixed, and remedies or preventives be devised. (Fig. 5.) Realization of this view has resulted in the devoting of particular attention to the questions involved in the transportation and storage of fruits. In this work, which is conducted by Mr. G. Harold Powell, and an able corps of experts, effort is being made to determine the underlying principles that govern the maturing of fruits, with a view to readjusting our harvesting, packing, transporting and storage methods, so that they will conform to the actual requirements. Much work has been done with the peach, the apple, the pear and the small fruits, but for sometime past, particular attention has been paid during about six months of the year to the problems connected with the handling of citrus fruits in California. Work has been concentrated upon this field not because it was more in need of help than other fields, but because the strong co-operative organization of the citrus industry in that state, taken in connection with the railroad transportation and refrigeration service already developed, rendered the conditions very favorable for the systematic working out of principles that are expected to be found applicable to fruit handling throughout the country. The work has had very generous support by practically all the interests involved and the results obtained and already in view have been gratifying to all connected with the industry. Some of these results may be briefly summarized as follows:

The former general practice of holding oranges in the packing house for several days to "cure" before packing and shipping has been largely abandoned because of the demonstration through these investigations that with the methods of handling that are ordinarily practicable, each day of delay in the packing house temperatures results in an appreciable increase in the amount of decay developed in transit regardless of method of shipment.

The discovery and demonstration of the fact that the fundamental and most common and important cause of decay in transit is mechanical injury to the fruit in harvesting, hauling or handling it in the packing house through carelessness of employes, use of unsuitable tools, and machinery, especially those of complex character which are easily put out of order has resulted in the reconstruction of a number of cooperative and in-



Fig. 4.—Strawberries wrapped in Japanin paper for storage. Prevents tainting of flavor.



Fig. 5.—A "slack" barrel of apples.

dividual packing houses with a view to better handling of the fruit. Simpler devices are being installed and they are being run at lower speed, greatly to the advantage of the fruit. The labor cost of the handling is increased somewhat by these more careful methods, but the reduction in decay and the increased prices obtained for it in the market are yielding handsome profits to those cooperative associations and individual shippers who are putting the principles into practice as they are discovered.

The beneficial influence of quick cooling upon fruit that is to be shipped long distances by checking the ripening processes and retarding the development of decay both in transit and in storage, is now generally recognized. It was first thoroughly tested and established in this work, and while larger development of facilities for the commercial cooling of fruits for shipments has occurred in California than elsewhere, the principle involved is of general application and is destined to profoundly modify the general practice with other fruits and in many regions. Some 300 carloads of oranges were thus handled in southern California in 1907, greatly to the advantage of the shippers who were able by this method to hold their fruit in sound condition much longer than usual, thus steadyng instead of glutting the markets at critical times. The loading of the fruit in a cool condition made it possible to fill the car much fuller than is usual without risk of producing a high temperature in the top of the car, which is destructive to the upper tiers of fruit. The carrying capacity of the cars loaded with precooled fruit was increased from 10 to 40 per cent in contrast with ordinary method.

The strikingly beneficial results have led to the utilization of all cold storage facilities in the region and the erection of several cooling plants, and according to recent press reports, the preparation for the erection of large plants by the Southern Pacific and Santa Fe Railroads at convenient assembling points on their respective systems. There is some danger that too great haste may be made, but the policy in this work is to advance through experimentation rather than to recommend hasty action in such cases.

The value of this work to the citrus industry of California during the past year has been estimated by leading growers and shippers to be worth at least a million dollars annually.

Individual instances of improvement in results obtained in orange shipments may be noted as follows: One of the largest orange growing enterprises in southern California, a corporation owning several hundred acres of groves and packing its own fruit, had usually had from 5 to 30 per cent of decay in its shipments upon arrival at destination. Inspection of the methods practiced in grove and packing house made by the Bureau representatives in 1905 showed that the fruit was handled with about the average care used in the region at that time. Investigation showed that 20 to 25 per cent of the oranges were cut with the clippers or were stem punctured, and that the packing house which was equipped with overhead sizer, contributed to the further injury of the fruit. The company was advised to change its method of picking from box rate to day labor and did so. In 1906 and '07 it was found that the percentage of clipper cutting and stem puncturing has been reduced to from 1 to 3 per cent. The packing house has been modified the brushing of the oranges has been stopped, the packing and loading of the cars has been done with care, with the result that shipment under ventilation has been found entirely satisfactory for at least two months after most of the shipments from southern California have been forwarded under ice. This results in a saving of \$65 to \$85 per car, according to destination. During this same period the market reputation of this pack has steadily risen because the fruit commanded the confidence of the buyers by arriving in sound condition day after day. Prices received for the fruit have been near the top of the market throughout the season of 1907. The additional cost of careful handling is estimated not to have been more than 10c per box.

Another instance is that of a grower with large acreage whose fruit early in the season of 1907 arrived in New York in bad order, some carloads developing as much as 25 per cent of decay. Both shipper and receiver ascribed the decay to excessive tenderness of the fruit brought on by over-fertilizing or other methods in handling the groves. An investigation showed that about 20 per cent of the fruit was mechanically injured in handling. As a result of this, the grower radically changed his methods, adopting the suggestions of the Bureau representatives, with the result that the decay in the commercial shipments disappeared almost immediately and did not reappear through

FIG. 3. Packing an experimental export shipment of winter apples in West Virginia.



the season. This grower has recently stated that by insisting rigidly on the careful handling of the oranges the net increased receipts averaged from 50c to \$1.50 a box after the change in methods was adopted.

A third illustration is that of a cooperative association which in 1905 had the reputation of producing fruit of the poorest carrying quality though it was excellent in other respects. Receivers had come to expect excessive decay in the brands of this association. It was generally ascribed to mysterious local climatic and soil conditions. Investigation of the groves and the house showed that the groves were badly infested with scale and the fruit was badly disfigured by sooty mold, which rendered washing and brushing necessary. The packing house was found to be very complicated, the fruit that was washed passing through more than a thousand feet of machinery of different kinds before it was packed. The fruit often remained in the house a week or more before it was shipped. Packing house and shipping experiments were carried on in cooperation with this association in 1906 and 1907, with the result that the members of the association became convinced that their fruit was not inherently poor in keeping quality but was being injured by the manipulation made necessary by the presence of the scale upon the trees. There was general fumigation of the groves in the autumn of 1906, so that in 1907 not more than 50 per cent of the fruit needed to be washed. The overhead machinery in the packing house was eliminated, the picking was done with care, part of it by a picking crew controlled by the packing house, and the fruit was shipped out much more quickly than previous. The average decay shown in the shipping experiments from this house in 1907 was as follows:

Apparently sound, brushed fruit.....	1.8%
Apparently sound, washed fruit.....	2.6%
Commercially packed fruit.....	4.8%
Mechanically injured fruit.....	26.9%

This association has not yet reached the limit of practical improvement, but the reputation of its brands of fruit has already been elevated to a higher class, as the fruit has continued to arrive in the markets in better condition than formerly.

As a general result of this work, it may be stated that the entire practice of handling and forwarding oranges in California

is in process of quite rapid modification in the direction of more careful harvesting, simpler equipment and prompter shipping than formerly. In addition to this, in several places equipment for quick cooling or pre-cooling is being installed. In connection with these changes, there has been a gratifying reduction in the percentage of decay of the crop as an entirety reported by receivers.

VITICULTURAL INVESTIGATIONS.

The work in viticultural investigations at present is mainly concentrated upon problems connected with the determination of the relative adaptability of resistant stocks to typical vineyard soils on the Pacific Coast and relative congeniality of the *vinifera* varieties of these stocks. This work is conducted by Mr. George C. Husmann, with several assistants. In this connection eleven cooperative experimental vineyards are maintained in which several hundred of the leading resistant varieties, direct producers and raisin, table and wine grapes are being tested. Another important feature of this work is the investigation of the *rotundifolia* grape varieties of the South Atlantic and Gulf states of which the scuppernong is the best known sort. In cooperation with the North Carolina state agriculture department a mother vineyard for this type of grape has been established in which all the important varieties are being tested and the methods of trellising, training, pruning, etc., are being worked out.

FRUIT DISTRICT INVESTIGATIONS.

Under this head, effort is being made by Mr. H. P. Gould and an assistant to determine more accurately than has been possible the approximate cultural range of fruit varieties and their adaptability to growth for different purposes in particular districts. Special attention is being paid in this connection to the fruits grown in the Blue Ridge and the Allegheny Mountain region of the east and the Ozark region of the west. In connection with it several hundred cooperative observers are making notes of the dates of blossoming, leaf, ripening, etc., of orchard fruits from year to year.

PECAN INVESTIGATIONS.

Under this head effort is being made to determine the adaptability of the recognized choice varieties of this nut to different sections of the south to determine their self-fertility, the causes of non-filling of kernel, etc., and other points of information in connection with this rapidly developing branch of the fruit industry.

PROCEEDINGS

WISCONSIN STATE HORTICULTURAL SOCIETY.
ANNUAL CONVENTION.

MADISON, February 4, 5, 6, 1908.

AFTERNOON SESSION—FEBRUARY 4.

The meeting was called to order by President R. J. Coe at 2 P. M.

The president appointed the following committees:

Credentials—L. G. Kellogg, Wm. Longland, G. W. Reigle.

Reception—M. E. Henry, C. L. Richardson.

Resolutions—Geo. J. Kellogg, W. S. Hager, C. L. Pearson.

Revision of premium lists—A. J. Philips, Wm. Toole, D. E. Birmingham.

PRESIDENT'S ADDRESS.

Again we have met in annual convention to review the work of the past year, to renew old acquaintances and form new ones and to plan a campaign for the future. The year has been one of varied activities along all horticultural lines, and so far as this society is concerned, we feel that we have made very substantial progress and that we are in much better position than we have ever been before to carry on the work that has already been inaugurated and to take up and carry forward a great deal of new work.

The trial orchards have become a prominent feature of our work and are beginning to demonstrate the wisdom of planting

and maintaining them. The one at Wausau, now ten years planted, has fully demonstrated that, with proper care, a suitable location and the right varieties, apples can be successfully grown in Central Wisconsin. It has also shown that cherries are a very doubtful proposition in that section. While others planted in the northern part of the state are not yet of sufficient age to show what can be done in that section. From our short experience at Poplar (which is near Superior) it would seem that the varieties that will succeed in that section must be of the hardiest, and that but few of the many varieties planted are likely to survive the rigors of that climate for any great length of time. Undoubtedly there are some localities in that region where apples will succeed, but that they will succeed generally is extremely doubtful.

During the year two new orchards have been located, one at Manitowoc in Manitowoc county and one at Gay's Mills in Crawford county not so much to test varieties, for almost any variety seems to do well, but to try to demonstrate that a large quantity of a very few varieties well grown will find a ready and profitable market, and that in favorable locations this branch of horticulture can be made a very profitable proposition. The increasing number of trial orchards calls for an increased outlay to properly care for and keep in good condition, but thanks to the persistent and efficient efforts of our secretary, aided by a great many of our members and our friends in the legislature, we now have a largely increased appropriation which will enable the society to very greatly extend its work and increase its usefulness, not only along this line, but in many other lines as well.

During the year we have lost three of our members by death and have added to the roll _____ new members, being a very gratifying increase in our membership. This question of membership I consider a very important one, not so much for the membership fee as for the influence of the members themselves. Every *working* member we can enlist into the army of Wisconsin horticulturists is just one more lever to help pry the other fellows out of the rut of hog and hominy and bare surroundings style of living on to the higher and better way of having plenty of fruit and vegetables and grounds well planted with trees and shrubs, with plenty of vines and flowers about the house. Wisconsin

needs a lot of tree planters. Henry Cuyler Bunner has so beautifully expressed what I would like to say in regard to tree planting in his "The Heart of the Tree" that I will give it in his own words.

What does he plant who plants a tree?
He plants the friend of sun and sky;
He plants the flag of breezes free;
The shaft of beauty, towering high;
He plants a home to heaven anigh
For song and mother-croon of bird
In hushed and happy twilight heard—
The treble of heaven's harmony—
These things he plants who plants a tree.

What does he plant who plants a tree?
He plants cool shade and tender rain,
And seed and bud of days to me,
And years that fade and flush again;
He plants the glory of the plain;
He plants the forest's heritage;
The harvest of a coming age;
That joy that unborn eyes shall see—
These things he plants who plants a tree.

What does he plant who plants a tree?
He plants, in sap, and leaf, and wood,
In love of home and loyalty
And far-cast thought of civic good—
His blessings on the neighborhood
When in the hollow of His hand
Holds all the growth of all our land—
A nation's growth from sea to sea
Stirs in his heart who plants a tree.

ANNUAL REPORT OF SECRETARY.

This annual task of presenting a report on the work of the Society for the past year by your secretary is approached this year with an unusual amount of satisfaction for the year has been filled with encouragement. Perhaps in no other year in the history of the Society has the field of our activities been so widened, so many big things happened, so much accomplished that will place our Society in a position to be more helpful to all the people of the state as in the year 1907.

Appropriation.

The big thing of course was the very substantial increase in our appropriation from \$4,400 to \$8,000.

Bill 314 A, introduced by our fellow member W. S. Hager, member of assembly from Brown county, passed through the various and devious stages of legislative detail, followed closely at all times by assemblyman Hager and senator Pearson, finally passed both houses without a dissenting vote early in June. In reviewing the history of this appropriation bill and seeking the causes which led to its success we find three factors prominent:

First, and foremost, the persistent and untiring efforts of our representatives in the legislature, Mr. Hager and Mr. Pearson.

Second: The splendid help given by the committee of one hundred members which staid by the bill to the finish. This committee selected with reference to their location in the state, or rather the various assembly and senatorial districts, furnished splendid assistance by correspondence and personal interviews with members of the legislature. Originally one hundred, the number soon dropped to 90 and later to 78 but the faithful 78 never faltered unto the end.

The third factor leading to success was the work which the society has accomplished in the past. Our record was good and our character as an organization above reproach.

Stating these points again in the reverse but logical order we find first; that as a Society we had "made good" to the people of the State, we had been faithful to our stewardship.

Secondly: Our members were faithful to their trust and showed their interest by informing the legislature of these facts and thirdly we had efficient members in the legislature who looked after our interests.

Altho paradoxical it must be said that the only opposition shown in any quarter to our bill served eventually as a help in that the true nature of the opposition was made known to the members of the legislature and served in a reactionary way to help our cause.

Another bill affecting the Society passed both houses but was vetoed by the governor. This bill if it had become a law would have permitted us to issue our report in monthly installments similar to the Minnesota plan.

Trial Orchards.

Another cause for congratulation is the rapid extension of our trial orchard work in a new field. This will be given in more detail in the report of your secretary as Superintendent of Trial Orchards.

Farm Institutes.

By action of the Executive Committee in session at Shiocton August 28th the secretary was authorized to arrange with the Superintendent of Farmers' Institutes for a special lecturer who should devote all of his time to talking horticulture. While your secretary believed then and is still of the opinion that the Department of Farm Institutes should assume the entire expense of such a lecturer the best arrangements that could be made was an equal division of the salary and expenses with certain provisos covering appointment of lecturer, the lines he should follow, etc. At the December meeting of the Board of Managers the appointment of Mr. D. E. Bingham was announced by Pres. Coe and confirmed by the Board. Mr. Bingham began work on December 10th and has since been doing most excellent work.

Change in Membership Fee.

The society in convention at Shiocton adopted an amendment to the constitution reducing the fee for annual membership to

fifty cents. This with the action of the Society at the 1907 annual convention making the fee for members of local societies twenty-five cents has served to materially increase the membership. The total number of members this date, (Feb. 1st) is 702, an increase of 32½ per cent over last year at this time.

The total number of life members is 98, an increase of 16 since my last report.

As stated in previous reports the membership is held on a strictly cash basis and those who do not send renewal fee within a reasonable time after being notified are dropped from the list promptly. The increase has come very largely as a result of persistent newspaper advertising and circular letters.

The older members of the Society are frequently urged to aid in increasing the membership roll but results from this source are not encouraging.

When mailing the programs of this convention early in January a circular letter was enclosed to 370 carefully selected members including the officers and members of the executive committee asking them to secure one member each before this convention. The following only reported.

(Read List)

Now for the first time, fellow members during my four years' service as your secretary I register a complaint. I have so far endeavored to excuse the officers of the Society and older members when appeals of this sort have failed of results on the grounds of lack of time and other reasons but I am now about ready to conclude that it is a lack of interest, a lack of "esprit de corps," a lack of enthusiasm on the part of the majority of our members the expression of which places the Minnesota Society in the lead as far as numbers is concerned. Your secretary can and should do much in the way of advertising and soliciting memberships but he cannot do it all, for unless each individual member will put his shoulder to the wheel and push a little our progress must be slow. The circular letters sent you, fellow member, soliciting your aid, imploring, even begging you to get new members costs money to send out, and are always earnest personal appeals to you and are deserving of a better fate than to be laid aside perhaps with a smile and the thought that "Cranfield likes to talk." Having thus relieved my mind I will proceed with the statement of work for the year.

Publications.

The Annual Report was distributed to members in May, the earliest date on record. The demand for the report has been greater than in any previous year. Continuing the plan inaugurated in 1905 several hundred copies were sent to county clerks for distribution among town chairmen and a package of 24 is forwarded to each Farm Institute where Mr. Bingham speaks. A very limited supply remains on hand. But two bulletins have been issued during the year, viz. No. 11, Seedless Apples, 2,000 copies, 11 pages, 4 illustrations. No. 12, The Blight Canker of Apple Trees, 2,500 copies, 23 pages, 17 illustrations. The demand for our bulletins does not increase hence the number issued has been cut down.

Local Societies.

Oshkosh reports the organization of a local society which makes twelve locals affiliated with the State Society. Some of these are towers of strength to the parent society and some are but weak props. The societies at Madison and Lake Geneva continue to enroll their entire membership in the State Society; the Sparta and Manitowoc Societies each enroll a fair delegation, Oshkosh the youngest has also sent in 6 or 8 but of the others we must as usual pass over in silence. The greatest period of activity of these Societies in their connection with the State Society appears to be just preceding our annual convention.

Summer Meeting.

The meeting this year was held in Shiocton on invitation of the people of that place and the Shiocton Garden Land Co. The attendance was larger than at any other summer meeting in recent years and the program followed with much interest by all present.

State Fair Exhibit.

Our exhibit occupied the space permanently assigned us and consisted mainly of an exhibit of apples in bulk from Wausau orchard, twenty-eight bushels being shown.

County Fairs.

The increasing number of applications from County and District Fair Associations in the State prompted your secretary to propose to the Board of Managers a plan by which the judging of fruit at these fairs could be placed on a better basis. In pursuance of this plan I have written to every Fair association in the state offering suggestions for the revision of their fruit lists and the appointment of judges. The number and nature of the responses to date have been extremely gratifying and it is likely that a majority of the premium lists for the coming fairs will conform closely with the adopted lists of the Society and the exhibits be passed on by judges appointed by our Society.

Contract Orchards.

Inquiries multiply each succeeding year from members and others regarding the different contract orchard firms operating in the state and considerable time has been spent in investigating the plans pursued by these companies. The "Contract Orchard" has fallen into disrepute of late. Some years ago different reputable and responsible members of the society engaged in the practice of selling orchards on contract receiving a portion of the price in cash and agreeing to take the remainder at the end of a term of years or in lieu thereof a portion of the first crop. So far as I have learned these contracts were faithfully carried out by the seller and to the satisfaction of the buyer.

Within the past five or six years, however, there have appeared in the state, representatives of firms claiming headquarters and extensive nurseries in Ohio, Michigan and other states selling orchards on contracts of which the following is a fair sample.

Orchard Contract.

between

.....
..... Proprietors
of

Party of the first part and of County of
State of Wisconsin of the second part

Witnesseth, That the undersigned have agreed to enter into the following contract:

This Company, party of the first part, will furnish to party of the second part the following bill of trees etc. for the purpose of improving my property.

112	Apple	Quince
	Crab	Grape
18	Pear	Gooseberry
42	Plum	Currant
	Prune	Blackberry
	Cherry	Raspberry
	Peach	Strawberry

Varieties Written on Back Hereof.

All to be first class stock. At the proper time to plant trees above mentioned, the said second party shall have prepared the ground and agrees to have same in good state of cultivation, and to plant the trees above mentioned according to printed instructions furnished by the company. The party of the first part agrees to trim or prune the trees at the proper time, and to replace any trees etc. that may die within five years from the date of delivery free of cost, except trees that may be destroyed by stock or peeled or girdled by rabbits or mice.

In consideration of the above mentioned goods furnished and services by the party of the first part, the said second party agrees to pay to said Company, ninety dollars (\$90.00) cash on delivery at _____, State of Wisconsin in the fall of 1904, and ninety dollars (\$90.00) in cash on or before the Fall of 1909, being five years from the date of delivery, all cash payments due and payable at the office of the Company at _____ of the _____, party of the first part will accept one-half of the fruit produced the season of 1910 instead of above second cash payment, at the option of the party of the second part, the fruit to be delivered to nearest railroad station to purchaser.

The party of the second part further agrees that should I sell or otherwise dispose of the land on which this orchard is planted, during the life of this contract the deferred payments are due and payable at once. Said second party also agrees to cultivate and care for this orchard according to instructions furnished and to keep the same free from weeds and grass. Said second party agrees not to counterman this contract.

In Testimony Whereof, the _____ Orchard Co. by its
Digitized by Google

agent and said second party have hereunto set their hands and seals this — day of —, 190—.

THE — ORCHARD Co.,

Party of the First Part.

By — Agent.

Signature of purchaser —,

Party of the Second Part.

As may be seen from this the owner of the land agrees to pay \$180 for 112 apple trees, 18 pear and plum and 42 other plants including an assortment of small fruits. I have been assured by several reliable nurserymen in our state that this stock may be furnished at a profit, for less than \$65. The owner, therefore, pays the balance, or \$115 for the promise on the part of the company to prune and replace for five years.

We cannot call such a contract a humbug but when one who has studied these different plans and then compared them with straight prices offered by our substantial nurserymen, there can be but little doubt where to buy.

Conclusion.

As this report has been extended to undue length the conclusion should and will be brief. The year has been one of great encouragement. The Society membership has increased. If any mistake has been made it has been the assumption on the part of the members as a whole that the Society consists of the officers and executive committee when in fact it consists of the members thereof.

Let every member during the coming year devote but one hour of his time in securing new members or in preaching the gospel of horticulture, we may soon be the largest as we are now the strongest and most influential Society in the United States.

15—Hort.

FINANCIAL REPORT OF SECRETARY.

RECEIPTS.

Refund from H. H. G. Bradt	\$ 5 25
Refund from A. N. Kelley	1 00
Refund from M. S. Henry	2 00
Refund from Gimbels	5 85
Refund from Iowa State Hort. Society	19 12
Fruit sold	241 97
Vouchers for expenses	525 00
Membership fees and misc.	332 50

	\$1,132 69

CREDITS.

By payments to Treas.....	\$226 75
By expenses as per accts. audited.....	837 43
Cash on hand	68 51

	\$1,132 69

REPORT OF COMMITTEE ON AWARDS.

Your committee on awards has examined the fruit on exhibition and make the following awards.

Best Collection, D. E. Bingham, 1st; John Reis, 2nd; L. H. Palmer, 3d.

Best 4 Plates, winter, L. H. Palmer, 1st; A. N. Kelley, 2nd.

Best 3 Plates, winter, Henry Simon, 1st; L. H. Palmer, 2nd.

Best New Apple, A. J. Phillips, 1st; Mrs. Ramsey, 2nd.

Best Seedling Apple, A. J. Phillips, 1st; A. N. Kelley, 2nd.

Best Plate Avista, A. J. Phillips, 1st; D. E. Bingham, 2nd.

Best Plate Baldwin, A. N. Kelley, 1st; John Reis, 2nd.

Best Plate Ben Davis, John Reis, 1st; John Reis, 2nd.

Best Plate Dominion, D. E. Bingham, 1st.

Best Plate Eureka, A. J. Phillips, 1st.

Best Plate Fameuse, Henry Simon, 1st; Wm. Toole, 2nd.

Best Plate Gano, D. E. Bingham, 1st; John Reis, 2nd.

Best Plate Gideon, John Reis, 1st.

Best Plate Golden Russett, L. H. Palmer, 1st; Henry Simon, 2nd.

Best Plate Longfield, Wm. Toole, 1st; Henry Simon, 2nd.

Best Plate Malinda, A. J. Phillips, 1st; A. N. Kelley, 2nd.

Best Plate McIntosh, D. E. Bingham, 1st; D. E. Bingham, 2nd.

Best Plate McMahan, John Reis, 1st; D. E. Bingham, 2nd.

Best Plate Newell, Henry Simon, 1st; John Reis, 2nd.

Best Plate Northern Spy, E. D. Hopson, 1st; E. D. Hopson, 2nd.

Best Plate N. W. Greening, J. G. Buehler, 1st; H. H. Harris, 2nd.

Best Plate Perry Russett, Wm. Toole, 1st; W. A. Toole, 2nd.

Best Plate Pewaukee, A. N. Kelley, 1st; L. H. Palmer, 2nd.

Best Plate Plumb Cider, L. H. Palmer, 1st; Henry Simon, 2nd.

Best Plate Seek-no-further, Wm. Toole, 1st; E. D. Hopson, 2nd.

Best Plate Scott Winter, Wm. Toole, 1st; John Reis, 2nd.

Best Plate Sutton Beauty, D. E. Bingham, 1st; D. E. Bingham, 2nd.

Best Plate Talman, L. H. Palmer, 1st; John Reis, 2nd.

Best Plate Twenty Ounce, John Reis, 1st; John Reis, 2nd.

Best Plate Utter, J. G. Buehler, 1st; Henry Simon, 2nd.

Best Plate Walbridge, J. G. Buehler, 1st; L. H. Palmer, 2nd.

Best Plate Wealthy, J. G. Buehler, 1st; D. E. Bingham, 2nd.

Best Plate Windsor, J. G. Buehler, 1st; D. E. Bingham, 2nd.
Best Plate Wolf River, Frank Ovenden, 1st; Frank Ovenden, 2nd.

Best Peck N. W. Greening, John Reis, 1st; Wm. Toole, 2nd.
Best Peck Wealthy, D. E. Bingham, 1st; Henry Simon, 2nd.

We also desire to make honorable mention of a fine exhibit by M. C. Clarke of Madison of the following varieties of apples from the Hood River Valley, Oregon; Arkansas Black, Ortley, Newton Pippin and Spitzenburg, also commendable exhibits of grapes by G. W. Reigle and Geo. J. Kellogg.

L. G. KELLOGG,
Judge.

REPORT OF SECRETARY AS SUPERINTENDENT OF TRIAL ORCHARDS.

WAUSAU ORCHARD.

According to the plan adopted by the trial orchard committee the Wausau orchard was thoroughly cultivated in the spring and then seeded to clover and timothy. The trees are now so large that cultivation is no longer practical.

The orchard was carefully pruned in April especial attention being given to the plum orchard. The early or April spraying was omitted this year, but extra attention given to the two applications of Bordeaux, the first just following the falling of the petals and the second ten days later.

One of our prominent members who attended the convention of the Michigan Society less than a thousand years ago came home overflowing with enthusiasm about spraying. There he heard of sprayed orchards with less than 10 per cent of wormy fruit! Had he read carefully the reports of our own Society he would have learned that results no less remarkable have been secured every year for four years at Wausau. Last year I reported that less than one-tenth of one per cent of the apples were wormy and this statement was based on the result of a very close observation and examination of many bushels of different kinds. This year the results were equally remarkable, in

fact it was only by diligent search that a wormy apple could be found. The fruit was also remarkably free from scab.

A little neglect in the spraying work last spring resulted in one of the most striking demonstrations of the value of Bordeaux I have ever seen. A few of the trees which bore no fruit were but lightly treated at the first spraying and passed over entirely when spraying the second time. In August and September these trees could be distinguished readily and without reference to the crop by the yellowing and falling leaves the result of apple scab. It was easy to surmise what the general result would have been in respect to scabby apples if no spraying had been done.

Crop. The yield of apples was the biggest in the history of the orchard, many kinds being loaded to the breaking point. The kinds bearing a full (heavy) crop are as follows: Hibernal, Longfield, Wealthy, McMahan, Dudley, Peerless, Newell, Repka, Okabena, Patten, Dominion, and Malinda. It was the "off" year for Duchess and Wolf River; the half dozen or more Northwestern Greening trees remaining of the original planting bore a fair crop. While Wealthy is mentioned in the list it must be said that the fruit was small and in every respect inferior, for Wealthy. This variety has not done well at Wausau. The Malinda trees bore their first crop this year and it certainly was a full one; the trees could not well have borne more, there would have been no room for the fruit. Peerless also made a remarkable showing this year in quality of fruit borne.

The banner variety in point of yield was the Hibernal, the 38 trees yielding 375 bushels of apples; five bushels more would have given an average yield of 10 bushels per tree, trees 10 years old. The total yield of apples reported by the party who purchased the crop was 1,600 bushels, free from worm and scab.

The cherry crop was a failure this year as in past seasons. Some varieties of plums bore a fair crop, others nothing.

BARRON.

Two acres additional were planted this year making three acres in all. But few trees died outright as a result of winter conditions but as the season advanced many more (about 70) failed to make a satisfactory growth, and most of these will no doubt succumb before next spring. A large part of the loss

may be ascribed to quality of stock received, especially the plum stock. We hope for better success in this respect another year.

POPLAR.

The Poplar orchard has suffered severely during the past year. While but 33 apples and 12 cherry trees were re-set in the spring a large number that appeared alive early in the season have since died. Mr. Peterson's report dated November, 1907, shows 400 apple, 10 crab and 15 plum either dead or so far gone that re-planting will be necessary. The Trial Orchard Committee has given directions that only Hibernal, Wealthy, Duchess, Patten Greening and Longfield be used in replacing. This committee also decided on a system of tile draining a portion of the orchard which plan will be executed next summer.

MAPLE.

Two of the three acres in the Maple orchard were planted last spring, mostly apples, of the following varieties, Duchess, Wolf River, Hibernal, Wealthy, N. W. Greening, McIntosh, Fameuse, Scott, Transparent, Longfield, University, Iowa Beauty, Tolman, Utter and of plums and cherries the following: Surprise, Quaker, Rockford, Hammer, De Soto, Early Richmond.

MEDFORD.

The Medford orchard is now full, that is, all the ground covered by our lease has been planted. Less than a dozen trees were re-set last year.

NEW ORCHARDS.

Manitowoc.

In pursuance of the plan adopted by the executive committee two new orchards were established during the past season and a contract in sight for a third. These orchards are located at Manitowoc and Gays Mills.

At Manitowoc five acres have been leased from the trustees of the county asylum for the insane about two miles east of the city of Manitowoc.

Gays Mills.

Is a thriving village about half way up the Kickapoo Valley in Crawford county. The orchard, however, is not

located in the valley but nearly 300 feet above it and consists of five acres. In both cases the owner or lessor has agreed to furnish land rent free and also all labor necessary in planting, cultivating and spraying the orchard, the Society furnishing only the stock and superintendence. The crop to belong to the owner of the land.

At Manitowoc no farmer could be found who cared to enter into such a contract and it required three visits in the part of the committee to find a location when finally the county of Manitowoc took pity on us and leased us a portion of the county farm.

At Gays Mills the situation was entirely different. Here no difficulty whatever was experienced in finding a suitable location.

These newer orchards will be conducted wholly on a commercial basis and planted wholly to apples. But five kinds are to be planted, one acre of each. The following kinds were selected by the trial orchard committee: Wealthy, Northwestern Greening, McMahon, McIntosh and Newell.

Sturgeon Bay.

The third site is at Sturgeon Bay where a lease is in prospect for five acres of apple orchard planted ten years and generally neglected. The purpose is to cultivate and generally renovate this orchard so as to make it yield as good a crop as that of Mr. Bingham and other neighboring orchards. In this way it may prove an excellent object lesson and stimulate tree fruit growing. It also marks out an entirely new line of work for the Society. In the northern orchards we are testing the climate and the soil conditions. Farther south these have been tested and the results are known. The new orchards, therefore, will be merely for the purpose of demonstrating the possibilities in the field of apple growing.

That the planting of apple orchards on a market basis will prove profitable no one who is familiar with the conditions can doubt. For the third time in my annual report to this Society I will state my opinion that no more favorable conditions exist anywhere in the United States for the raising of apples for market than in Crawford county, Wisconsin. There may be other counties as good but none, all things considered, excel it. If this Society succeeds in any large measure in developing the resources of this section in fruit growing we will have fulfilled our obligation to the state in the best possible manner.

REPORT OF TRIAL ORCHARD COMMITTEE.

MR. D. E. BINGHAM.

As chairman of the Orchard Committee I will make a report on the orchards inspected in August.

Owing to the failure of the Railway Co. to get me to Eau Claire on schedule time I did not get to the Barron orchard.

Mr. Coe and myself were the only ones of the committee who could get away. We were, however, accompanied by our secretary and our former president, Dr. Loope and Mr. —— from Minnesota, which we appreciated very much.

Mr. Coe reported the Barron orchard in good condition, trees all growing with very few exceptions.

Our Poplar orchard shows unfavorable conditions for orchard. The land is too wet and unless tile drained, I do not predict any great success there. The Duchess, Wealthy, McMahan, Transcendent, Hyslop, looking the best. Native plums appear to be doing very well. The portion of the orchard left in sod has already reached the climax of failure and can be devoted to something else soon. The orchard has been ridged some, to give drainage, but the results are very far from satisfactory as the trees were planted before the ridging and consequently were too deep and still in very wet heavy red clay.

I would suggest that if this orchard is to be drained that the Society get a release from all but five acres and drain that and take care of it a little better and show results which will be more satisfactory in many ways.

The Maple orchard appears in good condition for the first year. Some poor stock was planted in this orchard but its being on a well drained, sandy soil the conditions look favorable for the orchard.

The Medford orchard we found looking very good, with the exception of a few trees that are planted in the low part or ravine which runs through the orchard. This needs draining and a method of culture to get a little more humus in the soil.

Our last orchard to visit was the Wausau orchard. Here we found a good crop of fruit on the trees, and with but few exceptions the trees looking very good. Longfield and Wealthy showed

some poor foliage but not in all instances. Only where the apple canker had affected them badly. Some fire blight but not much. The Hibernal, Okabena, McMahan, Duchess appeared to be the best commercial varieties in this orchard. The apple canker appeared to be pretty well under control only a very few trees that we noticed any of the disease in its active state.

The plums in this orchard seem very much in need of pruning and cultivating if anything is to be expected from them.

Cherries only partially alive and a failure as far as fruit is concerned. They appeared to be affected with shot hole fungus or were on too wet soil.

DISCUSSION.

Mr. C. L. Pearson: May I have a minute's time? Ever since I have listened to the secretary's report, I have been sensible of a very glaring defect in that report. Mr. Cranefield and I are not a mutual admiration society, and we are not throwing bouquets at each other, but I know something about how that appropriation came to go through the legislature. It was through the untiring efforts of Secretary Cranefield. (Applause.) I know that he saw the great need of it and he made other people see the need of it and whenever that bill came before the committee for a hearing, Mr. Cranefield was there and any opposition that developed against it he was able to overcome and I wish at this time just to set that matter right and not allow Mr. Cranefield's innate modesty to do himself an injustice.

Mr. Reigle: I move that what has been said be embodied in the proceedings of the meeting.

The President: Our reporter has been busy all the time.

Mr. Reigle: I know, but we want to fix it so that it will not be cut out. Motion prevailed.

The secretary read the following letter:

MILWAUKEE, Wis., Feb. 3rd, 1908.

To Secretary Cranefield.

DEAR SIR: Enclosed find fee for membership. I hope that you will have a nice time. I am too old to come out in the cold.

Yours truly,

GEO. JEFFERY.

A motion by Mr. Toole that the secretary be instructed to send a word of fraternal greeting from this Society by telegram to Mr. Jeffery was carried by rising vote.

EVENING SESSION—FEBRUARY 4.

TREASURER'S REPORT.

L. G. KELLOGG, Treasurer.

In account with The Wisconsin State Horticultural Society.

1907	Receipts	Dr.
Feb. 5 To Balance on hand.....	736 17	
Feb. 19 To Loan German Nat. Bank.....	500 00	
Mch. 9 To Loan German Nat. Bank.....	500 00	
May 23 To Loan German Nat. Bank.....	500 00	
July 9 To Annual Appropriation.....	8,000 00	
July 9 To Rec'd from State Treas.....	111 00	
Aug. 13 To Geo. D. Van Dyke L. membership.....	5 00	
Sept. 11 To F. Cranefield Sale of Fruit.....	226 75	
		\$10,578 92
By vouchers returned (Nos. 1 to 217 inclusive)....	6,547 21	
To Balance on hand.....	4,031 71	
		\$10,578 92

(The detailed account of expenditures has been omitted from the printed report for economy of space. The complete report, covering several pages, has been filed with the Governor as required by law. A duplicate copy will be furnished to any member on application to the secretary, F. Cranefield.)

REPORT OF FINANCE COMMITTEE.

Having examined the books, vouchers and bills of the secretary and treasurer of the Wisconsin State Horticultural Society we are pleased to report that we find the same in good form and correct.

Respectfully submitted,

IRVING C. SMITH,
T. E. LOOPE,
C. L. RICHARDSON.

On motion of Dr. Loope the reports were adopted.

The election of officers being next in order, Mr. Reigle placed in nomination for president, Mr. R. J. Coe. There being no further nominations, the secretary was instructed to cast the unanimous ballot of the Society for Mr. Coe for president, which was done accordingly.

Mr. Hanchett placed in nomination Mr. D. E. Bingham for vice president, and the secretary was instructed to cast the ballot for Mr. Bingham.

Mr. L. G. Kellogg was then in the same manner unanimously elected to the office of treasurer.

A recess of ten minutes was then taken to allow the delegates from the local societies to nominate members for the executive committee. The following nominations were reported: First District, A. J. Smith; Second District, E. P. Sandsten; Third District, William Toole; Fourth District, C. L. Meller; Fifth District, H. C. Melcher; Sixth District, L. A. Carpenter, Seventh District, A. J. Philips; Eighth District, M. E. Henry; Ninth District, W. S. Hager; Tenth District, Irving Smith; Eleventh District, C. L. Richardson.

On motion of Dr. Loope, the secretary was instructed to cast the ballot of the Society for the names selected as members of the executive committee.

WEDNESDAY MORNING SESSION, FEBRUARY 5.

The President: The first thing to take up this morning is the reception of delegates from other states. Is Mr. Kirk here from Iowa?

Mr. Kirk (Iowa): The horticultural people of Iowa send their greetings to the brethren of Wisconsin by me, one of their members and they wish me to say that notwithstanding the discouraging year we have just had, that we still think that of all things good, particularly fruit, Iowa can produce the best, and we want to say that in the future more than in the past we are to be reckoned with in the markets of the country in the fruit line. 1907 was a bad year for Iowa. The south three-quarters of the state did not raise sufficient fruit for home consumption, owing to an unusually warm spell in the very early spring, followed by extreme cold and freezing at just the time when it ought to have warmed up. The northern part of the state was somewhat better off, as the warm spell did not prevail there quite so long and we had a respectable crop, but northern Iowa has never given the attention to fruit raising which it deserves or which it has received in the central and southern parts of the state and consequently the crop was quite light. We are not discouraged because we had one poor crop. We said a few unpleasant things about the weather and went on, planted our corn and fed our cattle and hogs and had something to live on just the same if we did not have apples and cider to wash it down. Iowa is indebted somewhat to Wisconsin for some good things, among which I believe is the Northwestern Greening, which if I mistake not, originated in Wisconsin. We were also indebted to Wisconsin at our last annual meeting in December for the presence of a very genial Doctor, whom you sent over there. We enjoyed the Doctor very much. The Doctor mentions our having thrown a number of bouquets to Mr. C. G. Patten, the Burbank of Iowa, but he failed to mention that concealed in one of these bouquets was a "long green" clearing house certificate, or its equivalent, to the amount of \$1,000, and we gave that to Mr. Patten. We do not think that that by any means cancels our obligations to him. We appreciate Mr. Patten in Iowa, and I believe your people do also.

Prof. L. R. Taft (Mich.): I am hardly here as a delegate and in fact I hope you will have with you before the meeting closes a regular delegate from our Society. I know our secretary has asked one or two to attend, and I was told that one of them would be here, but as he may not come, I am very glad to offer the greetings of our Society to you. We have been favored in the past years by a number of your members and have always enjoyed having them with us and for myself, and I know I can speak for the others who have been across the lake, we have always enjoyed coming to Wisconsin. When I found the meeting would be at Madison, I was particularly glad to avail myself of the opportunity to come. We have had all kinds of mishaps in Michigan. I think we owe part of our troubles to Wisconsin. I know that in October, 1906, some of your playful zephyrs must have got away, they jumped over the state there and settled down right in the heart of our fruit belt and as a result they killed several millions of our peach trees, and I can only think it must have been the effect of your cold zephyrs that came over there and killed them, because it was the first time we ever had anything of that kind, and I hope it will be the last. But when we consider the northern half of Michigan, I might say we had I think the best season ever known. We had very large crops of apples, peaches, cherries and large crops of quite a number of other fruits. When it came to apples, peaches and cherries, it was the largest crop we ever had and the crop being destroyed for the most part in southern Michigan, of course we had very good prices, so that the fruit growers in the northern half are well pleased and I am glad to say the apple growers in southern Michigan had perhaps the best crop they ever grew where they took care of the trees, but the men who did not give their trees proper care had practically no crop and what they did have is practically worthless. That showed very well what care will do for an orchard. But we hope for better luck during the coming year. Everything seems favorable. Let me say that our Society is certainly surprising. The last three or four meetings have been the best we have ever had. The best perhaps was at Battle Creek last December and we have had calls from all over the state for meetings of the Society, and we shall have one week after next in the eastern part of the state, and we hope you will come over

there. You can see there what Michigan can do in the way of apple orchards at least and we hope to have some of our fruit on exhibition.

The President: We have a Northern Illinois man with us, Mr. Hey. We will be glad to hear from him in place of their regular delegate.

Mr. Hey: I am glad to be with you; sorry, however, for your sake, that our regular delegate could not be here, as I know that he can do better than I can in every respect. We had a very cold, backward spring after a very warm March that brought out the buds so that the pink of the blossom showed on the surface, and then twenty-eight nights of freezing early in April, that pretty nearly fixed our fruit so that we never got a taste of a plum nor an apple, or a cherry, or anything of that kind, in that country, except a few peaches that we managed to get through, something that nobody seems to be able to account for. I was lucky enough to have a few peach trees and we had an abundant supply of peaches for our own use and a few which we sold, which brought as high as seven dollars a bushel, so that you can see that home grown peaches down there are a luxury, being Champion peaches they were very fine. I wish to assure you that we feel very much under obligations to the Wisconsin Society down there. We have a saying there that the Wisconsin Society is a live and up-to-date Society and it is a good criterion for us to go by.

Mr. Andrews, delegate from Minnesota spoke briefly.

On motion of Dr. Loope, the delegates from other states and members of other state societies who were present were made honorary annual members of the Society. On motion of Mr. Toole, Prof. Taft, Mr. Wm. A. Taylor and Mr. Kollock were made honorary annual members of the Society.

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